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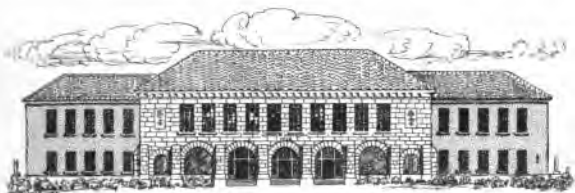
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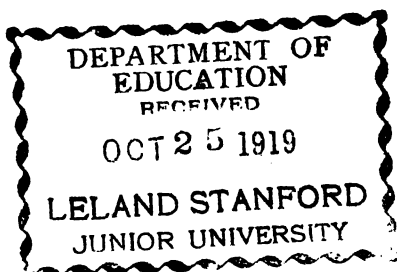
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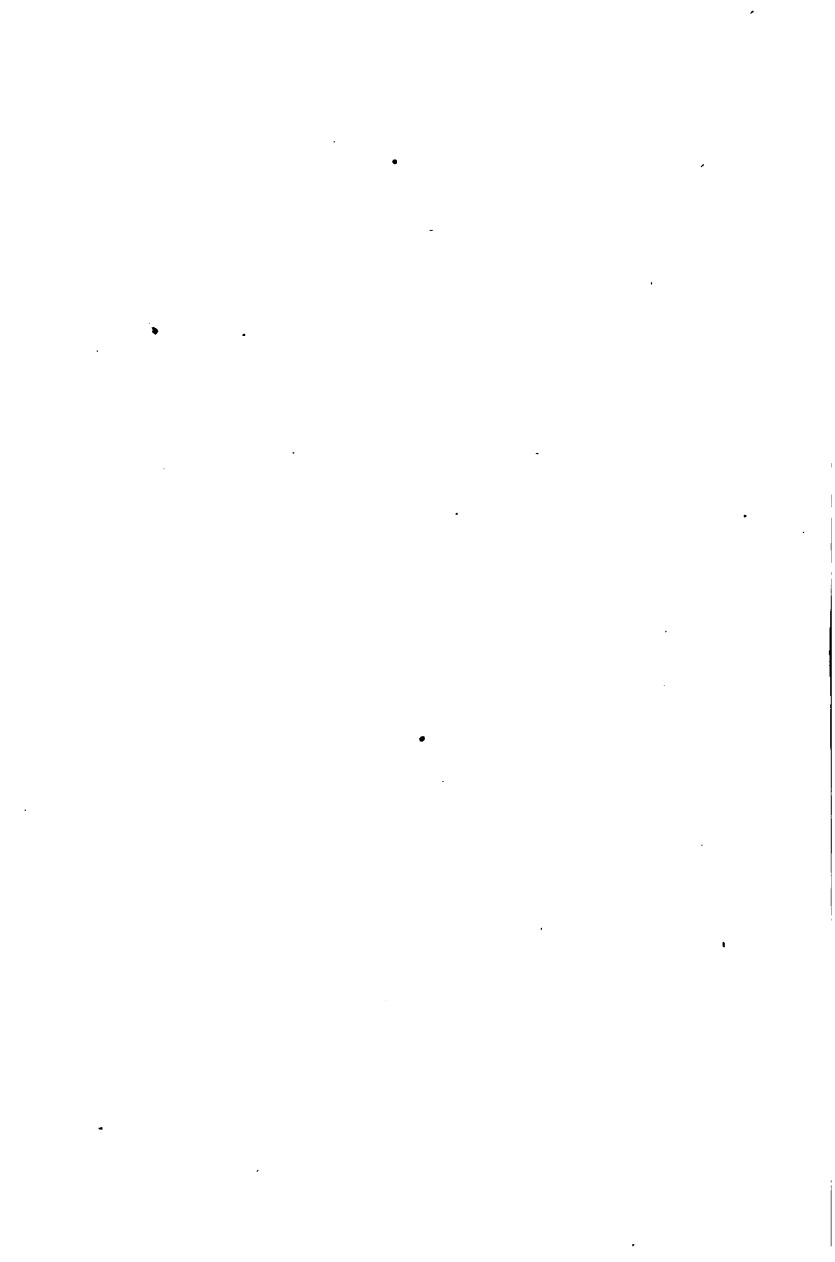
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Inductive Series.

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FIRST LESSONS

IN

ARITHMETIC

ON THE

INDUCTIVE PLAN

INCLUDING

ORAL AND WRITTEN EXERCISES.

BY

WILLIAM J. MILNE, PH. D., LL. D.,  
PRINCIPAL OF THE STATE NORMAL SCHOOL, GENESEO, N. Y.

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## PREFACE

THIS book is designed to teach the principles of Arithmetical Science as far as they are involved in the elementary processes, and to secure a reasonable degree of accuracy and rapidity in expressing numbers and computing results.

The pupils for whose use this book is intended can not be expected, at the outset, to explain processes, give definitions, or assign reasons, though their notions of all of them may be quite correct; much less should they be expected to grasp the principles of a science by committing to memory statements which are the deductions and generalizations of persons entirely familiar with the subjects treated. And, therefore, this work has been prepared upon the *inductive* and *objective* methods, so that the pupil may obtain his knowledge of arithmetic from actual work with numbers, rather than from the stereotyped statements of the book.

The true method of awakening in the child a clear idea of numbers is through a perception of objects, or by pictures or other representations of them. After he has become familiar with things and their names, the name will signify to him all that he needs to know about the objects so far as number is concerned; and it is no longer necessary that the objects should be present before him. The necessity, too, of associating the same numbers with such a variety of things, causes him at length to cease to regard them in connection with any particular thing, or as any thing more than abstractions.



In harmony with these laws of the development and growth of mind, this work presents at first the idea of number connected with visual representations of objects; afterward, when the pupils become familiar with the objects, concrete examples are given without illustration, and these are immediately followed by exercises upon abstract numbers, so that the pupil may become familiar with the various combinations that may be formed.

The first lessons are devoted to instruction in counting, reading, and writing numbers up to twenty. Immediately following these, are lessons upon Addition, in which abundant practice is given in combining numbers. The fundamental processes of Subtraction, Multiplication and Division, are treated upon a plan similar to that exemplified in Addition, including besides, numerous examples combining two or more of the previous processes.

The lessons on Fractions are so simple and yet so thorough, that the pupil is enabled to read, write, add, subtract, multiply, and divide fractions when the processes are not very complex.

The work on Written Arithmetic, which follows, is believed to be simple, thorough, and practical; and the brief and practical treatment of the various classes of denominate numbers in common use, makes the work quite comprehensive within its scope.

With the hope that the features of this book will commend it to all intelligent persons, and that instruction in the rudiments of arithmetic may be rendered more interesting and effective through its agency, it is confidently offered to the public.

W. J. M.

STATE NORMAL SCHOOL,  
GENESEO, N. Y., *January, 1878.*



# CONTENTS

I. Objects and numbers from 1 to 10 . . . . .	7
II. Counting numbers from 1 to 20 . . . . .	8
III. Oral and slate exercises in Addition . . . . .	16
IV. Special review of Addition . . . . .	30
V. Oral and slate exercises in Subtraction . . . . .	32
VI. Special review of Subtraction and Addition . . . . .	48
VII. Reading and writing numbers to 100 . . . . .	50
VIII. Oral and slate exercises in Multiplication . . . . .	53
IX. Special review of Multiplication, Subtraction, and Addition . . . . .	70
X. Oral and slate exercises in Division . . . . .	72
XI. Special review of Division, Multiplication, Subtrac- tion, and Addition . . . . .	91
XII. Reading and writing Fractions . . . . .	93
XIII. Addition of Simple Fractions . . . . .	96
XIV. Subtraction of Simple Fractions . . . . .	99
XV. Multiplication of Simple Fractions . . . . .	103
XVI. Division of Simple Fractions . . . . .	104
XVII. Notation and Numeration of Numbers . . . . .	107
XVIII. Written exercises in Addition . . . . .	113
XIX. Written exercises in Subtraction . . . . .	118
XX. Written exercises in Multiplication . . . . .	122
XXI. Written exercises in Division . . . . .	128
XXII. Exercises in Denominate Numbers . . . . .	134
XXIII. Table of Roman Notation . . . . .	144

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- I. FIRST LESSONS IN ARITHMETIC.
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- III. KEY TO PRACTICAL ARITHMETIC.
- IV. ELEMENTS OF ALGEBRA. (*In preparation.*)
- V. ELEMENTS OF GEOMETRY. (*In preparation.*)

# FIRST LESSONS

## IN ARITHMETIC



### NUMBERS FROM I TO 10

<b>One</b>	Dog	1	I.	<b>Six</b>	Ships	6	VI.
<b>Two</b>	Trees	2	II.	<b>Seven</b>	Birds	7	VII.
<b>Three</b>	Horses	3	III.	<b>Eight</b>	Books	8	VIII.
<b>Four</b>	Sheep	4	IV.	<b>Nine</b>	Cherries	9	IX.
<b>Five</b>	Houses	5	V.	<b>Ten</b>	Stars	10	X.



## LESSON I.

1. Of what is this a picture?
2. How many tables are there in the picture?
3. How many balls are there?
4. Make as many marks on your slates as there are lamps in the picture.
5. The *figure 1* represents one table, one ball, one lamp, or one object of any kind.
6. Make the figure one on your slates. 1.
7. How many kittens are playing with the ball?
8. How many kittens are playing with the cat?
9. How many kittens are 1 kitten and 1 kitten?
10. How many chairs do you see in the picture?
11. Name two objects on the table.
12. Make two marks on your slates.
13. The *figure 2* represents two chairs, two books, or two objects of any kind.
14. Make the figure two on your slates. 2.
15. Make the figures one and two.



## LESSON II.

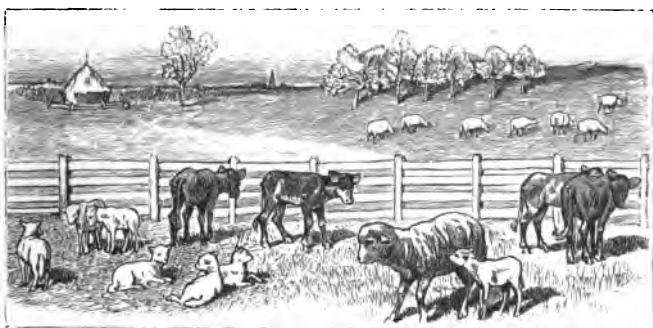
1. How many boats do you see in the picture?
2. How many fishes has one of the boys caught?
3. How many fishes has the other boy caught?
4. Two fishes and one fish are how many fishes?
5. How many fishing-rods do you see?
6. Make as many marks as there are fishing-rods.
7. The *figure 3* represents three objects.
8. Make the figure three on your slates. *3*.
9. Make the figures one, two and three.
10. How many boys in the picture are fishing?
11. How many boys are digging for bait?
12. How many boys are three boys and one boy?
13. How many oars has each boat in the picture?
14. Make as many marks on your slates as there are boys in the picture.
15. The *figure 4* represents four objects.
16. Make the figure four on your slates. *4*.
17. Make the figures one, two, three and four.



## LESSON III.

1. How many roses do you see on the bush?
2. How many birds are flying near the bush?
3. How many birds are there on the bush?
4. How many birds are four birds and one bird?
5. How many eggs are there in the nest?
6. Make a mark for every egg in the nest.
7. The *figure 5* represents five things.
8. Make the figure five on your slates. 5.
9. Make the figures one, two, three, four and five.
10. How many rose-buds are there near each other?
11. How many do you find growing alone?
12. How many rose-buds are five rose-buds and one rose-bud?
13. Make six marks on your slates.
14. The *figure 6* represents six things.
15. Make the figure six on your slates. 6.
16. Make the figures one, two, three, four, five, six.

1 2 3 4 5 6



## LESSON IV.

1. How many lambs are at the left in the picture?
2. How many trees are in a row in the picture?
3. How many trees are standing alone?
4. How many trees are six trees and one tree?
5. How many lambs are there in the picture?
6. Make seven marks on your slates.
7. The *figure 7* represents seven things.
8. Make the figure seven on your slates. *7*.
9. How many sheep are feeding in the field?
10. How many sheep are with the lambs?
11. Seven sheep and one sheep are how many sheep?
12. How many posts do you see in the picture?
13. Make as many marks as there are posts.
14. The *figure 8* represents eight things.
15. Make the figure eight on your slates. *8*.
16. Make the figures one, two, three, four, five, six, seven, eight.

*1 2 3 4 5 6 7 8*





## LESSON V.

1. How many trees are there in a row in the picture?

2. On how many trees are there ladders?

3. How many trees are eight trees and one tree?

4. How many rounds has the ladder?

5. Make nine marks on your slates.

6. The *figure 9* represents nine objects of any kind.

7. Make the figure nine on your slates. *9.*

8. How many loads of grain are there?

9. How many horses do you see?

10. How many rakes are there in the picture?

11. How many rails are there in each section of fence in the picture?

12. How many men do you see in the picture?

13. How many shocks of grain are there?

14. How many sections of fence are there?

15. How many posts has the fence?

16. Make the nine figures on your slates.

*1 2 3 4 5 6 7 8 9*

## LESSON VI.

1. How many cherries are there on the larger twig in the picture?

2. How many cherries are on the other twig?

3. How many cherries are nine cherries and one cherry? *Ten* cherries.



4. Make nine marks and one mark. How many marks are nine marks and one mark?

5. How many pens are nine pens and one pen?

6. How many boys are nine boys and one boy?

7. How many pears are there represented in the following picture?

8. How many groups of ten pears are there?

9. Make ten straight marks on your slates.

10. The number *ten* is expressed thus: **10**.



11. The figure 1 at the left shows that there is one *ten*. The figure 0 at the right shows that there are no *ones*.

12. Express *ten*. What does the figure 1 denote? What does the figure 0 denote?

13. How many fingers have you on both hands?

14. Make as many marks as you have fingers.

15. Express the number *ten* by figures.

16. Name ten things that you see.

## LESSON VII.

1. How many ducks are swimming in the pond?
2. How many ducks are there on the bank?



3. Ten ducks  
and one duck  
are how many?  
*Eleven* ducks.

4. How many  
groups of ten  
ducks are there?

5. How many  
ducks are there besides the group of ten ducks?

6. Make ten marks and one mark. ///////// /

7. *Eleven* is expressed thus: **11**.

8. Express eleven on your slates.

*When two figures are written side by side, the one on the right denotes ones, the one next to it denotes tens.*

9. Express ten. Express eleven. What does 10 represent? What does 11 represent?

10. Make ten marks in a group and two besides on your slates. ///////// //

11. How many marks are ten marks and two marks? *Twelve* marks.

12. Express one ten and two ones, or *twelve*. **12**.

13. Express with figures, ten, eleven and twelve.

14. Make ten marks and three marks. ///////// ///

15. Ten and three, or *thirteen*, is expressed thus: **13**.

16. Write all the numbers from one to thirteen.

## LESSON VIII.

1. Make ten marks and four marks, or *fourteen* marks, on your slates. //////// ////

2. *Fourteen* is expressed thus: **14.**

3. How many books are ten books and four books?

4. Represent ten books and five books, or *fifteen* books, by marks. //////// /////

5. Express one ten and five ones, or *fifteen*. **15.**

6. How many are one ten and six ones?

7. Express one ten and six ones, or *sixteen*. **16.**

8. Express one ten and seven ones, or *seventeen*. **17.**

9. Express *eighteen*. **18.** Express *nineteen*. **19.**

10. Make ten marks and ten marks in separate groups on your slates. //////// ////////

11. How many tens are one ten and one ten?

12. Express two tens, or *twenty*. **20.**

13. What does 0 denote? What does 2 denote?

14. Express by figures all the numbers from one to twenty.

15. How many tens are there in fifteen?

16. How many ones are there in fifteen?

17. How many tens are there in twenty-four?

18. How many ones are there in twenty-four?

19. What shows that there are no ones in a number?

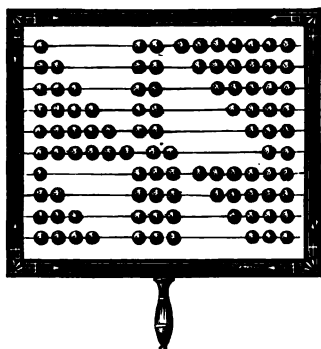
## SLATE EXERCISES.

Copy and read the following:

12	11	10	19	18
16	13	14	17	15

## LESSON IX.

1. How many balls are 1 ball and 2 balls? Express the answer on your slates, thus: 1 ball and 2 balls are 3 balls; or, 1 and 2 are 3.



2. How many balls are 2 balls and 2 balls? Express the answer thus: 2 balls and 2 balls are 4 balls; or, 2 and 2 are 4.

3. How many balls are 3 balls and 2 balls? Express the answer thus: 3 balls and 2 balls are 5

balls; or, 3 and 2 are 5.  $3 + 2 = 5$ .

The sign  $+$  takes the place of the word *and*. It is read *plus*.

The sign  $=$  takes the place of the word *are*. It is read *equal*. Then 1 and 2 are 3, is written  $1 + 2 = 3$ , and read, 1 plus 2 equal 3.

4. Express 2 and 2 are 4, and 3 and 2 are 5, on your slates, using the signs.

5. How many balls are 4 balls and 2 balls?  $4 + 2 = ?$   $5 + 2 = ?$   $6 + 2 = ?$   $7 + 2 = ?$   $8 + 2 = ?$

6. How many are 9 balls and 2 balls?  $10 + 2 = ?$

Counting numbers together is called *Addition*.

7. Form the addition table of twos.

TABLE.

$1 + 2 = 3$	$4 + 2 = 6$	$7 + 2 = 9$
$2 + 2 = 4$	$5 + 2 = 7$	$8 + 2 = 10$
$3 + 2 = 5$	$6 + 2 = 8$	$9 + 2 = 11$

## SLATE EXERCISES.

Copy and add the following:

2	4	2	7	2	8	6	2	3	2
6	2	9	2	5	2	2	4	2	7
<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>



## LESSON X.

1. How many birds are 1 bird and 3 birds?
2. How many acorns are 2 acorns and 3 acorns?
3. Harry bought 3 oranges one day, and 3 the next. How many oranges did he buy?
4. How many figs are 4 figs and 3 figs?
5. How many boys are 5 boys and 3 boys?
6. Helen gave a beggar 6 cents, and Mary gave him 3 cents. How many cents did both give him?
7. A man bought 7 loads of hay one week, and 3 the next. How many loads of hay did he buy?





## LESSON XI.

1. James had 3 oranges, and bought 4 more. How many had he then?  $3 + 4 = ?$

2. Mary had 4 pencils, and her aunt gave her 2 more. How many had she then?

3. If there are 9 cows in one field and 3 in another, how many are there in both fields?

4. John had 4 pennies, and earned 7 pennies. How many had he then?

5. Helen picked 3 roses from one bush and 7 from another. How many roses did she pick from both?

6. One hen's nest had 3 eggs in it, and another had 5. How many eggs were there in both nests?

7.  $3 + 4 = ?$     $4 + 7 = ?$     $4 + 6 = ?$

8. There are 6 lambs in one field and 2 in another. How many lambs in both fields?  $6 + 2 = ?$

9.  $4 + 2 = ?$     $7 + 3 = ?$     $3 + 5 = ?$

10. A man paid 10 dollars for a coat and 4 dollars for a hat. What did he pay for both?

11.  $9 + 3 = ?$     $3 + 8 = ?$     $8 + 4 = ?$

**12. How many are 10 and 2? 2 and 10?**

13. How many are 9 and 2? 2 and 9?

14. How many robins are 5 robins and 3 robins?

### SLATE EXERCISES.

**Copy and add the following:**

3	8	6	5	8	9	7	6	2	1
7	4	3	4	2	2	4	3	1	8



## LESSON XII.

1. There is 1 pigeon on one limb and there are 5 pigeons on another. How many are there on both limbs?  $1 + 5 = ?$



2. A man put 2 bushels of wheat in one bin and 5 in another. How many bushels did he put in both bins?  $2 + 5 = ?$

3. Richard gave 3 cents for a lemon and 5 cents for an orange. How much did he give for both?  $3 + 5 = ?$

4. How many girls are 4 girls and 5 girls?

5. How many canes are 5 canes and 5 canes?

6.  $6 + 5 = ?$   $7 + 5 = ?$   $8 + 5 = ?$   $9 + 5 = ?$

7. How many sheep are 10 sheep and 5 sheep?

8. A girl gave 1 cent for a needle and 6 cents for a spool of thread. How much did she pay for both?  $1 + 6 = ?$

9. A boy gave 2 cents for marbles and 6 cents for a top. How much did he pay for both?

10. How many lamps are 3 lamps and 6 lamps?

11. How many are 4 and 6? How many are 5 and 6?

12. A man bought 6 bushels of potatoes at one time, and 6 more at another time. How many did he buy at both purchases?  $6 + 6 = ?$

13. How many lambs are 7 lambs and 6 lambs?

14. How many are 8 and 6? How many are 9 and 6?

15. How many pinks are 10 pinks and 6 pinks?

16. Form addition tables of fives and sixes.

## TABLES.

$1 + 5 = 6$	$6 + 5 = 11$	$1 + 6 = 7$	$6 + 6 = 12$
$2 + 5 = 7$	$7 + 5 = 12$	$2 + 6 = 8$	$7 + 6 = 13$
$3 + 5 = 8$	$8 + 5 = 13$	$3 + 6 = 9$	$8 + 6 = 14$
$4 + 5 = 9$	$9 + 5 = 14$	$4 + 6 = 10$	$9 + 6 = 15$
$5 + 5 = 10$	$10 + 5 = 15$	$5 + 6 = 11$	$10 + 6 = 16$



## LESSON XIII.

1. How many apples are 1 apple, 2 apples and 3 apples? 2 apples, 4 apples and 1 apple?

2. If you put 2 dollars, 3 dollars and 4 dollars into an empty purse, how many dollars will there be in the purse?

$2 + 3 + 4 = ?$



3. How many are 9 and 6? 6 and 9?

4. How many are 8 and 5? 5 and 8?

5. Walter caught 2 fishes, Harry caught 5, and Webster caught 3. How many fishes did they all catch?

6. Arthur had 7 chickens, and his father gave him 6 more. How many had he then?

7.  $3 + 3 + 7 = ?$     $4 + 1 + 6 = ?$     $3 + 2 + 8 = ?$

8. How many are 3 books, 5 books and 6 books?

9. How many are 3 slates, 4 slates and 5 slates?

10. There are 5 birds in one nest and 4 in another.

How many birds are there in both nests?

11. How many are 10 and 3?    $3 + 10 = ?$

12. How many are 10 and 4?   4 and 10?

13.  $2 + 3 + 5 = ?$     $2 + 2 + 2 = ?$     $1 + 5 + 6 = ?$

14. What is addition? What is the sign of addition?

15. What is the sign of addition called?

16. Make the signs used in addition.

17. In one nest there were 5 little birds, in another 4, and in another 4. How many birds were there in these nests?

18. In a school 5 pupils were tardy on Monday, 2 on Tuesday, 3 on Wednesday, 3 on Thursday, and 0 on Friday. How many pupils were tardy during the week?

### SLATE EXERCISES.

Copy and add the following:

2	3	4	4	6	7	1
4	2	1	2	2	3	5
8	5	6	5	3	3	6
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

Copy and read the following:

20   18   15   17   13   12   11   19

## LESSON XIV.

1. If a darning-needle costs 1 cent, and a skein of silk 7 cents, what will both cost?

2. How many skeins are 2 skeins and 7 skeins?

3. If there are 3 spools in one group and 7 in another, how many spools are there in both groups?



4. A woman who had 4 quarts of cherries, bought 7 quarts. How many did she then have?  
 $4 + 7 = ?$

5. There are 5 boys in one group and 7 in another. How many boys are there in both groups?

6. There are 6 cows in one field and 7 in another. How many cows are there in both fields?

7. How many are 7 and 7? How many are 8 and 7?

8. How many are 9 and 7? How many are 10 and 7?

9. If I have 1 dollar, and my brother gives me 8 dollars, how many dollars will I then have?

10. How many chairs are 2 chairs and 8 chairs?

11. How many are 3 and 8? How many are 4 and 8?

12. George walked a distance of 5 miles one day, and 8 miles the next day. How far did he walk in both days?  $5 + 8 = ?$

13.  $6 + 8 = ?$   $7 + 8 = ?$   $8 + 8 = ?$   $9 + 8 = ?$

14. There are 10 girls in one class and 8 in another. How many girls are there in both classes?

15. Form the addition tables of sevens and eights.

### TABLES.

$1 + 7 = 8$	$6 + 7 = 13$	$1 + 8 = 9$	$6 + 8 = 14$
$2 + 7 = 9$	$7 + 7 = 14$	$2 + 8 = 10$	$7 + 8 = 15$
$3 + 7 = 10$	$8 + 7 = 15$	$3 + 8 = 11$	$8 + 8 = 16$
$4 + 7 = 11$	$9 + 7 = 16$	$4 + 8 = 12$	$9 + 8 = 17$
$5 + 7 = 12$	$10 + 7 = 17$	$5 + 8 = 13$	$10 + 8 = 18$



### LESSON XV.

1. How many peaches are 7 peaches, 2 peaches and 5 peaches?  $7 + 2 + 5 = ?$

2. A man gave 4 dollars for corn and 8 dollars for a ton of hay. How much did he pay for both?

3. A man has 2 cows in one pasture, 4 in another, and 7 in another. How many cows has he in the three pastures?

4. A woman sold 5 dozen eggs at one time, 4 dozen at another time, and 8 dozen at another. How many dozen did she sell?

5. A woman sold 7 pounds of butter at one time, 3 at another time, and 5 at another. How many pounds did she sell?

6.  $6 + 3 + 2 = ?$     $4 + 5 + 7 = ?$     $3 + 2 + 5 = ?$   
 7. How many are 9 and 4?   4 and 9?  
 8. How many are 10 and 7?   7 and 10?  
 9.  $8 + 5 + 7 = ?$     $3 + 7 + 5 = ?$     $8 + 6 + 3 = ?$   
 10. A farmer paid 5 dollars for sugar, 2 dollars for coffee, and 10 dollars for flour. What was the cost of the whole?  
 11. How many are 8 boys, 2 boys and 5 boys?  
 12.  $8 + 3 + 2 = ?$     $3 + 2 + 6 = ?$     $5 + 2 + 4 = ?$

## SLATE EXERCISES.

Copy and add the following:

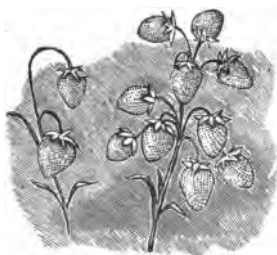
6	7	3	8	3	5	6	4	8
2	5	6	1	4	5	2	2	1
2	2	3	2	5	6	3	4	3
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>



## LESSON XVI.

1. There is 1 man on the steps and there are 9 men in the store. How many men are there in both placés?
2. Henry sold 2 books on Tuesday and 9 books on Wednesday. How many books did he sell in both days?
3. How many shells are 3 shells and 9 shells?
4. How many boats are 4 boats and 9 boats?
5. If Jennie is 5 years old, and her sister is 9 years older, how old is her sister?

6. How many are 6 and 9? 7 and 9?  
 7. There are 8 trees in one row and 9 in another. How many trees are there in both rows?  
 8. How many plants are 9 plants and 9 plants?  
 9. How many books are 10 books and 9 books?  
 10. A beggar had 1 cent, and a boy gave him 10 cents. How many cents did he have then?



11. If there are 2 strawberries on one stem and 10 on another, how many are there on both stems?  
 12. How many are 3 oranges and 10 oranges?  
 13.  $4 + 10 = ?$   $5 + 10 = ?$   
 $6 + 10 = ?$   
 14. A boy paid 7 shillings for oil and 10 shillings for a lamp. What was the cost of both?  $7 + 10 = ?$   
 15. How many are 8 pigeons and 10 pigeons?  
 16. How many are 9 and 10? 10 and 10?  
 17. Form the addition tables of nines and tens.

## TABLES.

$1 + 9 = 10$	$6 + 9 = 15$	$1 + 10 = 11$	$6 + 10 = 16$
$2 + 9 = 11$	$7 + 9 = 16$	$2 + 10 = 12$	$7 + 10 = 17$
$3 + 9 = 12$	$8 + 9 = 17$	$3 + 10 = 13$	$8 + 10 = 18$
$4 + 9 = 13$	$9 + 9 = 18$	$4 + 10 = 14$	$9 + 10 = 19$
$5 + 9 = 14$	$10 + 9 = 19$	$5 + 10 = 15$	$10 + 10 = 20$

## LESSON XVII.

1. Ruth picked 4 pinks from one stem, 3 from another, and 2 from another. How many pinks did she pick?

2. If there are 6 boys in one class, 7 boys in another, and 5 boys in another, how many boys are there in the three classes?  $6 + 7 + 5 = ?$

3.  $2 + 2 + 2 = ?$      $3 + 3 + 3 = ?$   
 $5 + 5 + 5 = ?$      $6 + 6 + 6 = ?$

4. Begin with 2 and count to 8 by 2's; thus: Two, four, six, eight.

5. Begin with 3 and count to 15 by 3's.

6. Begin with 1 and count to 19 by 3's.

7. How many bells are 5 bells, 2 bells, 6 bells and 4 bells?  $5 + 2 + 6 + 4 = ?$

8.  $10 + 5 + 3 + 4 = ?$      $6 + 8 + 4 + 2 = ?$

9.  $2 + 3 + 6 + 1 = ?$      $3 + 2 + 4 + 7 = ?$

10. Count to 20 by 5's. To 18 by 6's.

11. A merchant sold 5 yards of calico to one girl, 3 yards to another, and 6 to another. How many yards did he sell?

12. Begin with 2 and count to 17 by 3's.

13. How many are 7 barrels, 6 barrels and 4 barrels?

14. How many are 8 and 7 and 3?

15. Lucy had 8 pins, and found 10 more. How many had she then?





## SLATE EXERCISES.

Copy and add the following:

9	4	1	2	6	8	5	1	3
1	2	5	5	1	0	2	8	6
4	3	2	4	2	3	6	2	5
2	0	3	3	3	1	5	4	4
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>



## LESSON XVIII.

1. Jennie gave the teacher 6 hyacinths, Mary gave her 4, and Minnie gave her 3. How many hyacinths did they all give her?  $6 + 4 + 3 = ?$

2. In the park 3 boys are flying kites, 6 are playing ball, and 3 are rolling hoops. How many boys are there in the park?  $3 + 3 + 6 = ?$

3. There are 4 soldiers in one squad, 5 in another, and 6 in another. How many soldiers are there in the three squads?

4. How many are 4 guns, 5 guns and 6 guns?

5. There are 5 flags on one building, 2 on another, and 4 on another. How many flags are there on the three buildings?  $5 + 2 + 4 = ?$

6. There are 6 birds in one cage, 2 in another, and 7 in another. How many birds are there in the three cages?  $6 + 2 + 7 = ?$

7.  $1 + 2 + 6 + 9 = ?$   $8 + 1 + 5 + 3 = ?$

8.  $7 + 1 + 8 + 2 = ?$   $3 + 3 + 3 + 3 = ?$

10. Delia has 1 doll, Mina has 2 dolls, Carrie has 3 dolls, and Ruth has 2 dolls. How many dolls have these girls?

12. How many are 4 and 7 and 8?  $4 + 7 + 8 = ?$

14. A wealthy gentleman had 3 draft-horses, 5 riding-horses, and 6 carriage-horses. How many horses did he have?

16. James wrote 6 lines in his writing-book on Monday, 3 lines on Tuesday, 7 lines on Wednesday, and 4 lines on Thursday. How many lines did he write in those four days?

17.  $8 + 2 + 3 + 5 = ?$      $7 + 3 + 4 + 4 = ?$

2 1 1 6 4 8

2	1	1	6	4	8	5	6	4
2	5	3	1	5	2	3	4	4
2	4	7	3	2	1	2	5	4
2	6	4	2	3	5	4	2	4

## REVIEW EXERCISES.

Find the value of each of the following:

$5 + 4$	$6 + 8$	$6 + 3$	$9 + 4$	$8 + 1$
$6 + 4$	$5 + 9$	$5 + 7$	$5 + 3$	$7 + 9$
$7 + 6$	$2 + 8$	$8 + 3$	$6 + 4$	$8 + 8$
$5 + 6$	$4 + 7$	$7 + 9$	$3 + 9$	$7 + 5$
$3 + 9$	$3 + 5$	$9 + 3$	$4 + 4$	$6 + 3$
$8 + 3$	$5 + 6$	$8 + 7$	$4 + 8$	$7 + 8$
$6 + 6$	$5 + 5$	$6 + 9$	$6 + 5$	$4 + 9$
$8 + 4$	$4 + 9$	$5 + 8$	$7 + 6$	$5 + 7$

Add the following without using slate:

$2 + 3 + 4$	$3 + 4 + 5$	$6 + 1 + 5$
$7 + 2 + 5$	$6 + 5 + 3$	$2 + 9 + 2$
$4 + 7 + 5$	$6 + 3 + 4$	$5 + 2 + 7$
$6 + 5 + 8$	$4 + 9 + 6$	$5 + 6 + 8$
$3 + 5 + 6$	$3 + 9 + 2$	$4 + 6 + 2$
$3 + 5 + 6$	$7 + 5 + 4$	$7 + 3 + 5$
$4 + 1 + 9$	$5 + 9 + 2$	$7 + 6 + 2$
$6 + 8 + 3$	$5 + 3 + 4$	$4 + 7 + 5$
$3 + 8 + 4$	$3 + 9 + 6$	$5 + 9 + 4$
$2 + 5 + 4$	$2 + 7 + 3$	$6 + 1 + 5$
$6 + 5 + 4$	$7 + 9 + 2$	$5 + 7 + 8$
$3 + 1 + 6$	$5 + 2 + 7$	$6 + 3 + 4$
$7 + 2 + 7$	$5 + 5 + 6$	$6 + 5 + 6$
$3 + 7 + 2$	$3 + 2 + 5$	$5 + 7 + 6$
$2 + 5 + 7$	$3 + 6 + 8$	$5 + 2 + 7$
$7 + 3 + 5$	$4 + 6 + 5$	$6 + 5 + 4$

## REVIEW EXERCISES.

Copy and add the following:

8	7	5	3	5	6	5	6	7
4	6	9	8	4	4	1	2	2
3	5	2	6	8	2	2	4	6
4	2	4	2	3	7	8	3	5
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
3	6	5	5	4	6	3	2	4
4	2	3	9	7	4	2	1	2
5	3	8	4	3	1	5	6	7
4	5	1	0	1	8	4	4	6
2	2	3	2	5	1	2	5	1
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

Copy and add the following:

3 + 4 + 2 + 6	2 + 4 + 2 + 3	2 + 6 + 8 + 4
3 + 2 + 1 + 6	4 + 8 + 2 + 4	2 + 6 + 1 + 7
4 + 2 + 3 + 9	8 + 1 + 7 + 4	8 + 4 + 2 + 5
4 + 7 + 4 + 3	6 + 4 + 2 + 7	5 + 2 + 7 + 6
7 + 2 + 9 + 1	5 + 6 + 4 + 3	9 + 2 + 6 + 3
4 + 2 + 6 + 5	4 + 9 + 2 + 4	5 + 2 + 7 + 6
5 + 2 + 4 + 3	7 + 4 + 6 + 1	9 + 1 + 4 + 2
8 + 2 + 6 + 3	9 + 1 + 4 + 5	4 + 2 + 6 + 7
5 + 2 + 7 + 4	5 + 9 + 2 + 3	8 + 7 + 2 + 2
4 + 3 + 5 + 8	4 + 7 + 6 + 2	6 + 2 + 3 + 5
5 + 4 + 9 + 2	9 + 2 + 3 + 6	4 + 7 + 2 + 6
5 + 1 + 4 + 9	6 + 3 + 1 + 8	4 + 7 + 5 + 4
7 + 3 + 3 + 7	6 + 4 + 4 + 6	8 + 2 + 2 + 7
9 + 1 + 6 + 3	8 + 5 + 2 + 4	7 + 7 + 2 + 3



## LESSON XIX.

1. Make two marks on your slates. Erase one. How many marks are there left?

2. 1 mark from 2 marks leaves how many marks?

3. If there were 3 pencils on the table, and Helen took 1 away, how many were left?

4. How many are 3 pencils less 1 pencil?

5. If 4 apples were put in a box, and afterward 1 was taken out, how many remained?

6. How many are 4 apples less 1 apple?

7. Hold up 5 fingers. Put one down. How many fingers are you holding up?

8. How many are 5 fingers less 1 finger?

9. Make 6 dots on your slates. Erase one. How many are there left?

10. How many are 6 dots less 1 dot?

11. How many steamships are represented in the picture?

12. If 1 sails away, how many are left?

13. How many vessels are 7 vessels less 1 vessel?

14. How many boats do you see in the picture?

15. How many are being rowed away? How many are left?

16. How many boats are 8 boats less 1 boat?

17. If there are 9 trees, and a man cuts 1 down, how many will be left?

18. How many trees are 9 trees less 1 tree?

---

### LESSON XX.

1. A rose-bush had 3 roses on it, but 1 dropped off. How many roses were there left on the bush?

2. How many are 3 less 2?

3. Make 4 marks. Erase 2.  
How many are left?

4. How many marks are 4 marks less 2 marks?

5. Helen had 5 pennies, and gave 2 to a beggar. How many had she left?

6. How many are 5 less 2?



The sign — takes the place of the word *less*. It is read *minus*. Thus, 4 less 2 equals 2, is written  $4 - 2 = 2$ , and is read 4 minus 2 equals 2?

7. If you take 2 apples from a group of 6 apples, how many apples will be left?

8. How many apples are 6 apples less 2 apples?

9. Express 6 less 2 equals 4.  $6 - 2 = 4$ .

10. William had 7 pennies, and gave 2 for a pencil. How many had he left?  $7 - 2 = ?$

11. How many slates are 8 slates less 2 slates?

12. How many are 9 less 2? How many are 10 less 2? How many are 11 less 2?

13. How many are 12 dollars less 2 dollars?

Taking one number from another is called *Subtraction*.

14. Form the subtraction tables of ones and twos.

#### TABLES.

$1 - 1 = 0$	$6 - 1 = 5$	$2 - 2 = 0$	$7 - 2 = 5$
$2 - 1 = 1$	$7 - 1 = 6$	$3 - 2 = 1$	$8 - 2 = 6$
$3 - 1 = 2$	$8 - 1 = 7$	$4 - 2 = 2$	$9 - 2 = 7$
$4 - 1 = 3$	$9 - 1 = 8$	$5 - 2 = 3$	$10 - 2 = 8$
$5 - 1 = 4$	$10 - 1 = 9$	$6 - 2 = 4$	$11 - 2 = 9$



#### LESSON XXI.

1. Helen had 3 cents, and gave them for a pencil. How many cents had she left?  $3 - 3 = ?$

2. A man had 4 horses, and sold 3 of them. How many had he left?  $4 - 3 = ?$

3. How many cows are 5 cows less 3 cows?

4. A boy had 6 marbles, and gave away 3. How many marbles had he left?  $6 - 3 = ?$

5. How many dollars are 7 dollars less 3 dollars?  
How many are 8 less 3?

6. A woman had 9 dollars, and gave 3 for a hat.  
How many dollars had she left?

7. How many horses are 10 horses less 3 horses?  
How many are 11 minus 3?

8. If there were 12 pigeons on a limb, and 3  
flew away, how many remained?  $12 - 3 = ?$

9. If James had 4 apples, and gave away 4, how  
many had he left?  $4 - 4 = ?$

10. If Emily had 5 cents, and gave 4 cents for  
paper, how many cents had she left?

11. How many are 6 less 4? 7 minus 4 are how  
many?

12. How many are 8 less 4? 9 minus 4 are how  
many?

13. How many are 10 books less 4 books? 11 hats  
less 4 hats?

14. How many are 12 minus 4? 13 less 4 are how  
many?

15. Form the subtraction tables of threes and fours.

## TABLES.

$3 - 3 = 0$	$8 - 3 = 5$	$4 - 4 = 0$	$9 - 4 = 5$
$4 - 3 = 1$	$9 - 3 = 6$	$5 - 4 = 1$	$10 - 4 = 6$
$5 - 3 = 2$	$10 - 3 = 7$	$6 - 4 = 2$	$11 - 4 = 7$
$6 - 3 = 3$	$11 - 3 = 8$	$7 - 4 = 3$	$12 - 4 = 8$
$7 - 3 = 4$	$12 - 3 = 9$	$8 - 4 = 4$	$13 - 4 = 9$



## LESSON XXII.

1. There were 7 cents in a box, and William took out 3. How many cents were left in the box?

2. A merchant bought 12 lamps, and sold 4 of them. How many had he left?

3. John has 10 marbles, and Henry has 3. How many more has John than Henry?

4. A woman who had 9 yards of calico, used 4 yards. How many yards had she left?

5.  $8 - 2 = ?$      $9 - 2 = ?$      $10 - 3 = ?$

6.  $6 - 3 = ?$      $13 - 4 = ?$      $11 - 4 = ?$

7. A man bought 9 barrels of flour, and sold all but 3 of them. How many barrels did he sell?  
 $9 - 3 = ?$

8. A man bought a boat for 11 dollars, and sold it for 4 dollars. How much did he lose?

9. 3 from 12 leave how many?  $12 - 3 = ?$

10. William had 10 cents. He spent 1 cent for a pencil and 3 cents for paper. How many cents had he left?

11. Carrie had 12 apples, but she gave 2 to her sister and 1 to her brother. How many apples had she left?

12. How many are 6 less 2? 9 less 1 are how many?

13. There were 11 passengers in a stage-coach, 5 of whom got out. How many remained?

14.  $8 - 3 = ?$      $7 - 1 = ?$      $12 - 4 = ?$

15. How many are 8 less 2?  $8 - 2 = ?$

## SLATE EXERCISES.

Copy, subtract, and add the following:

4	8	7	9	8	6	5	7
2	4	2	3	2	1	3	2
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>



## LESSON XXIII.

1. A woman had 5 quarts of berries, and sold 5 quarts. How many had she left?  $5 - 5 = ?$

2. If 6 gallons of water run into a cistern in one hour, and 5 run out in the same time, how many gallons remain?  $6 - 5 = ?$

3. 5 books from 7 books leave how many books?

4. A merchant bought 8 penknives, and sold 5 of them. How many had he left?

5. Henry had 9 fish-hooks, and gave 5 of them to Martin. How many had he left?

6. How many are 10 less 5? 11 less 5?

7. 5 pencils from 12 pencils leave how many pencils?

8. 5 from 13 leave how many? 5 from 14?

9. In a class there are 7 girls and 6 boys. How many more girls are there than boys?

10. From a bunch of 8 keys, 6 keys were lost. How many keys were not lost?

11. A boy having 9 pennies, lost 6. How many had he left?  $9 - 6 = ?$

12. 6 from 10 leave how many? 6 from 11 = ?

13. How many are 12 less 6? 13 minus 6 are how many?

14. A farmer who had 14 bushels of potatoes, sold 6 bushels. How many bushels had he left?

15. How many are 15 boys less 6 boys?  $15 - 6 = ?$

16. Form the subtraction tables of fives and sixes.

### TABLES.

$5 - 5 = 0$	$10 - 5 = 5$	$6 - 6 = 0$	$11 - 6 = 5$
$6 - 5 = 1$	$11 - 5 = 6$	$7 - 6 = 1$	$12 - 6 = 6$
$7 - 5 = 2$	$12 - 5 = 7$	$8 - 6 = 2$	$13 - 6 = 7$
$8 - 5 = 3$	$13 - 5 = 8$	$9 - 6 = 3$	$14 - 6 = 8$
$9 - 5 = 4$	$14 - 5 = 9$	$10 - 6 = 4$	$15 - 6 = 9$



### LESSON XXIV.

1. A man who earned 7 dollars a week, saved only 2 dollars. How much did he spend?  $7 - 2 = ?$

2. A woman bought 9 yards of calico, and used 5 yards of it. How many yards had she left?

3. Henry had 11 rabbits, and James had 8. How many had Henry more than James?

4. Rush is 14 miles from Geneseo, and Avon is 9 miles from Geneseo, on the same road. How much farther from Geneseo is Rush than Avon?

5. James had 8 marbles, but lost 2 of them. How many marbles had he left?  $8 - 2 = ?$

6. A boy caught 9 pigeons, and gave 4 of them to a poor woman. How many had he left?  $9 - 4 = ?$

7. If 6 gallons of water run into a cistern in one minute, and 5 gallons run out, how much is the cistern filled?



8. Ned had 6 chickens, but the cat killed 3 of them. How many were left?

9.  $7 - 1 = ?$   $9 - 6 = ?$   $8 - 5 = ?$

10.  $13 - 5 = ?$   $15 - 4 = ?$   $13 - 2 = ?$

11. How many sheep are 9 sheep less 3 sheep?

12. A carriage-maker had 15 carriages, and sold 9 of them. How many had he left?

13. A clothier sold 8 coats, 6 of which were for boys and the rest for men. How many of the coats were for men?

14. Martha is 12 years old, and Mary is 4. How many years older than Mary is Martha.

15.  $6 + 8 - 1 = ?$   $4 + 5 - 3 = ?$   $3 + 7 - 2 = ?$

16.  $7 + 1 - 3 = ?$   $5 + 3 - 6 = ?$   $7 + 4 - 1 = ?$

17. How many are 7 and 3 less 2?

18. In a basket containing 12 oranges, 4 were decayed. How many were sound?

19. Amasa picked 16 quarts of berries, and sold 6 quarts of them. How many quarts had he unsold?

## SLATE EXERCISES.

Copy, subtract, and add the following:

9	7	8	9	7	8	4	7
<u>4</u>	<u>2</u>	<u>5</u>	<u>6</u>	<u>6</u>	<u>3</u>	<u>1</u>	<u>2</u>



## LESSON XXV.

1. Richard saw 8 ducks in a pond, 7 of which swam away. How many remained?

2. In a class of 9 children 7 are boys. How many are girls?  $9 - 7 = ?$

3. A cooper made 10 firkins, and sold 7 of them. How many had he left?  $10 - 7 = ?$

4. William is 11 years old, and Thomas is 7. How much older is William than Thomas?

5. A house has 12 windows, 7 of which are in the first story, and the rest in the second story. How many are there in the second story?

6. How many are 13 less 7? 14 less 7?

7. A farmer who had 15 turkeys, sold 7 of them. How many had he left?  $15 - 7 = ?$

8. There were 16 bottles on a shelf, 7 of which were filled with pickles, and the remainder with fruit. How many were filled with fruit?

9. There were 9 passenger-cars on a railroad track, 8 of which were filled with passengers. How many were empty?

10. How many are 10 less 8? 11 less 8? 12 less 8?

11. A merchant had 13 barrels of salt, and sold 8 of them. How many barrels remained unsold?

12.  $14 - 8 = ?$   $15 - 8 = ?$   $16 - 8 = ?$

13. How many are 17 trunks less 8 trunks?

14. Form the subtraction tables of sevens and eights.

## TABLES.

$7 - 7 = 0$	$12 - 7 = 5$	$8 - 8 = 0$	$13 - 8 = 5$
$8 - 7 = 1$	$13 - 7 = 6$	$9 - 8 = 1$	$14 - 8 = 6$
$9 - 7 = 2$	$14 - 7 = 7$	$10 - 8 = 2$	$15 - 8 = 7$
$10 - 7 = 3$	$15 - 7 = 8$	$11 - 8 = 3$	$16 - 8 = 8$
$11 - 7 = 4$	$16 - 7 = 9$	$12 - 8 = 4$	$17 - 8 = 9$



## LESSON XXVI.

1. There were 12 musk-rats in traps, but 2 escaped. How many were there left in the traps?

2. Helen had 6 violets, and Jennie had 16. How many more had Jennie than Helen?

3. What number added to 6 makes 16?

4.  $5 + 8 + 2 - 5 = ?$   $7 + 3 + 4 - 7 = ?$

5. Henry gave his sister 12 figs. She gave 3 to Sarah and 5 to Flora. How many had she left?  
 $12 - (3 + 5) = ?$

6. 12 are how many more than 5?



## LESSON XXVII.

1. Robert's father gave him 10 doves, but 9 of them died because they were not properly cared for. How many of them lived?

2. Eva solved 11 examples, 9 of which were correct. How many were wrong?

3. A painter bought 12 gallons of oil, and used 9 gallons. How many gallons had he left?



4. A grocer bought 13 casks of vinegar, and sold 9 casks. How many casks had he left?

5. How many are 14 less 9? How many are 15 less 9?  $15 - 9 = ?$   $15 - ? = 9$ .

6. From a group of 16 boys 9 ran away. How many were left?  $16 - 9 = ?$   $16 - ? = 9$ .

7. 9 from 17 leave how many?  $17 - 9 = ?$

8. How many are 18 less 9?  $18 - 9 = ?$

9. A merchant bought 11 chests of tea, and sold all but 1 of them. How many did he sell?  $11 - 10 = ?$   $11 - ? = 10$ .

10. A boy had 12 steel-pens, and gave away 10 of them. How many had he left?

11. A man bought 13 tons of hay, and, after feeding 10 tons to his horses, sold the rest. How many tons did he sell?  $13 - 10 = ?$   $14 - 10 = ?$

12.  $15 - 10 = ?$   $16 - 10 = ?$   $17 - 10 = ?$

13.  $18 - 10 = ?$   $18 - ? = 10$ .  $10 + ? = 18$ .



14. A merchant bought 18 whips, and sold all but  
 8. How many did he sell?  $18 - 8 = ?$   
 15. How many are 19 stoves less 10 stoves?  
 16. Form the subtraction tables of nines and tens.

## TABLES.

$9 - 9 = 0$	$14 - 9 = 5$	$10 - 10 = 0$	$15 - 10 = 5$
$10 - 9 = 1$	$15 - 9 = 6$	$11 - 10 = 1$	$16 - 10 = 6$
$11 - 9 = 2$	$16 - 9 = 7$	$12 - 10 = 2$	$17 - 10 = 7$
$12 - 9 = 3$	$17 - 9 = 8$	$13 - 10 = 3$	$18 - 10 = 8$
$13 - 9 = 4$	$18 - 9 = 9$	$14 - 10 = 4$	$19 - 10 = 9$



## LESSON XXVIII.

1. Begin with 1 and count to 11 by 2's.
2. Begin at 11 and count back to 1 by 2's.
3. Count 15 by 3's. Count 16 by 4's.
4. Count back from 15 to 0 by 3's.
5. Count back from 20 to 0 by 5's.
6. Henry had fifteen dollars. He gave 2 dollars for a hat, 3 dollars for a vest, and 6 dollars for a coat. How much had he left?
7. What number added to 3 makes 10?
8. What number added to 9 makes 17?
9. A harness-maker having 19 harnesses, sold all but 9. How many did he sell?  $19 - ? = 9$ .



## LESSON XXIX.

1. A man having 18 butter-tubs, sold 3 at one time, 5 at another, and 6 at another. How many tubs had he left?

2. In a room there are 14 flower-pots. There are 4 in one window, 5 in another, and the rest are in the third window. How many are there in the third window?

3. On the first vine there are 12 bunches of grapes, on another there are 3 bunches, and on another 4 bunches. How many bunches more are there on the first vine than on the other two?  
 $12 - (3 + 4) = ?$

4. How many are 7 and 5 less 3?  
 $7 + 5 - 3 = ?$

5. There are 13 boys playing ball, and 5 playing marbles. How many more are there playing ball than there are playing marbles?  
 $13 - 5 = ?$

6. What is meant by the term addition? What is meant by the term subtraction?

7. Julia is 9 years old, and her sister is 5 years older. What is the age of her sister?

8. Charles is 6 years old, and James is 17 years old. How much older than Charles is James?

9. What number added to 7 will make 15?

10. What number added to 5 will make 12?



11. Begin with 2 and count to 17 by 3's.
12. Count from 19 back to 1 by 3's.
13. What number subtracted from 18 will leave 10?  $18 - ? = 10$ .  $18 - 10 = ?$
14. What number subtracted from 16 will leave 9?  $16 - ? = 9$ .  $16 - 9 = ?$
15. In a school of 18 pupils all but 3 study geography. How many study geography?
16. James attended school 17 weeks, but Henry attended only 8 weeks? How many weeks did James attend more than Henry?  $17 - 8 = ?$
17. Julius had written all but 5 lines on a page of his writing-book. If the book had 19 lines on a page, how many had he written?
18. How many are  $3 + 3 + 2 + 2 - 4 + 5 - 2 + 7$ ?
19. How many are  $5 + 7 + 1 - 3 - 2 + 5 - 9 + 8$ ?
20. How many are  $6 + 4 + 5 - 3 - 6 - 2 + 8 + 9$ ?
21. How many are  $8 - 3 + 2 - 3 + 6 + 2 - 6 + 2$ ?
22. How many are  $6 + 8 - 7 - 2 + 5 + 6 + 1 - 4$ ?

### SLATE EXERCISES.

**Copy and add the following:**

5	6	4	5	6	5	3	2
4	2	2	1	2	9	4	3
3	5	1	8	4	6	5	7

**Copy and subtract the following:**

6	9	8	6	4	9	8	7
5	5	7	1	2	3	4	2

## REVIEW EXERCISES.

Find the value of each of the following:

8—2	9—3	8—4	9—6	6—2
7—5	8—3	7—5	6—3	8—7
4—1	9—4	7—2	9—2	8—3
6—6	6—1	8—2	6—4	7—3
7—2	5—2	6—4	8—3	9—7
8—5	9—4	8—1	6—5	7—3
12—4	15—6	13—6	14—9	16—6
15—6	17—9	12—8	11—4	15—7
13—4	10—5	14—9	13—9	11—8
18—9	17—8	10—8	11—8	16—9
15—6	13—7	15—6	12—7	14—5

Find the value of the following, without using slate:

3+2—4	4+6—5	6+3—2	5+6—8
4—3+6	9—4+2	6+5—8	5+6—9
5+8—7	6+9—5	9—5+2	6+7—6
4+7—3	5+6—9	8+7—9	6—3+4
8+5—3	9—6—2	9—8+6	8—3—4
9—6+5	9+5—6	8+2—6	9—3+2
7—2+5	8—3+4	6+3—8	7+5—9
8—4+3	6—4+2	7—5+6	9—7+2
9+2—8	8+6—9	7+3—4	9—4+2
8+3—9	8—6+2	9—7+3	8—6—2
8—2—4	9—3—6	8—6+2	8+6—9
9—3+6	9+2—8	9—6+4	8—3+7
6—4+2	6—4—2	8+3—9	8—3—4

## REVIEW EXERCISES.

Copy and find the value of the following:

$$6 + 3 - 4 + 2 - 6$$

$$7 - 3 + 8 - 6 + 2$$

$$5 - 3 + 7 - 2 - 6$$

$$8 - 3 + 6 - 5 - 4$$

$$5 + 9 - 8 - 3 + 2$$

$$7 - 5 + 4 + 2 - 8$$

$$9 - 3 + 2 - 6 + 4$$

$$9 - 3 - 4 + 6 + 2$$

$$5 + 6 + 3 - 3 - 9$$

$$9 - 3 + 6 - 3 - 8$$

$$8 + 3 - 7 - 4 + 2$$

$$5 + 2 - 3 + 6 - 4$$

$$9 - 3 + 6 - 4 + 8$$

$$8 - 3 + 7 + 2 - 6$$

$$9 - 4 + 3 + 2 - 6$$

$$9 - 4 + 3 + 2 - 8$$

$$5 + 2 - 3 + 4 - 8$$

$$2 + 6 - 3 + 7 - 5$$

$$9 - 3 + 4 - 3 + 2$$

$$6 - 3 + 4 - 6 + 2$$

$$4 + 2 - 3 + 6 - 4$$

$$7 - 3 + 2 - 6 + 4$$

When an example has several numbers inclosed in a parenthesis, find the value of those within the parenthesis first, and then of this result, and the rest of the numbers.

Thus,  $4 + 6 - (3 + 2 - 4) = 4 + 6 - 1$ ; for  $(3 + 2 - 4) = 1$ .

Copy and find the value of the following:

$$5 + 8 - (3 + 6 - 2)$$

$$6 + 8 - (7 - 2 + 6)$$

$$6 + 3 + (4 - 3 + 2)$$

$$7 + 3 - (5 + 2 - 6)$$

$$5 + 4 - (6 + 2 - 5)$$

$$9 - 2 + (6 - 4 + 2)$$

$$5 - 4 - (8 + 2 - 9)$$

$$8 + 6 - (2 + 3 - 1)$$

$$6 + 8 - (3 + 4 - 2)$$

$$8 - 4 + (8 - 6 + 4)$$

$$9 - 3 + (2 + 6 - 4)$$

$$9 + 8 - (8 - 3 + 2)$$

$$9 + 6 - (3 - 2 + 7)$$

$$9 - 7 - (8 - 6 - 2)$$

$$8 - 3 + (2 + 6 - 3)$$

$$9 + 2 - (7 - 4 - 2)$$

$$6 + 5 - (6 - [8 - 3])$$

$$2 + 6 - (3 - [4 - 3])$$



## LESSON XXX.

1. How many quails are there in each group?
2. Express ten on your slates.
3. How many quails are there in two of the groups?
4. How many are 1 ten and 1 ten?
5. Express 2 tens, or twenty: 20. What does the 2 represent? What does the 0 show?
6. Express 2 tens and 1, or twenty-one: 21.
7. Express 2 tens and 2 ones, or twenty-two.
8. Express twenty-three, twenty-four, twenty-five, twenty-six, twenty-seven, twenty-eight, twenty-nine.
9. Read the numbers you have written.
10. How many quails are there in the 3 groups?
11. Express 3 tens, or thirty: 30. What does the figure 3 represent? What does the 0 show?
12. Express 3 tens and 1, or thirty-one. 3 tens and 2 ones, or thirty-two.
13. Express all the numbers from thirty-two to thirty-nine.
14. Express 4 tens, or forty. Express 4 tens and 1, or forty-one.

15. Express the numbers from forty-one to forty-nine.
16. When two figures are written side by side, what does the figure at the right represent?
17. What does the figure at the left represent?
18. Write all the numbers from one to forty-nine.
19. Express in words: 24, 32, 38, 47, 18, 29, 10, 31, 49, 30.



## LESSON XXXI.

1. Express 5 tens, or fifty: 50.
2. How many figures are required to represent the number fifty?
3. What is the figure at the right?
4. What is the figure at the left?
5. How many tens are there in fifty?
6. Express 5 tens and 1, or fifty-one.
7. Write the numbers from fifty-one to fifty-nine.
8. Express 6 tens, or sixty: 60.
9. Write the numbers from sixty to sixty-nine.
10. Express the number seventy.
11. How many tens are there in seventy?
12. How many ones are there in seventy? How is this shown?
13. Write the numbers from seventy to seventy-nine. Read them.
14. Write the numbers from eighty to eighty-nine. Read them.



15. How many tens and ones are there in eighty-seven? In eighty-five? In eighty-eight?

16. Express in figures the numbers from eighty to eighty-eight.

17. Write 8 tens and 9 ones, or eighty-nine.

18. Express 9 tens, or ninety: 90.

19. Write the numbers from ninety to ninety-nine.

20. Ninety-nine and one more, make how many?  
*One hundred.*

21. How many tens are 9 tens and 1 ten?

22. How many tens are there in one hundred?

23. *One hundred* is expressed thus: **100**.

The figure 0 at the right shows that there are no ones, the 0 next to it shows that there are no tens, and the figure 1 shows that there is one hundred.

*When three figures are written side by side, the figure in the first place at the right represents ONES, the one next to it TENS, and the one at the left HUNDREDS.*

### SLATE EXERCISES.

Express in figures the following:

Thirty-two	Eighty	Forty-nine
Ninety-six	Eighteen	Sixty-seven
Eighty-four	Seventy-one	Thirty-three
Forty-seven	Twenty-nine	Thirty-eight

Copy and express in words the following:

36	52	28	77	78
84	81	39	29	55

## LESSON XXXII.

1. If you pay 1 cent for a pear, how many cents will you pay for 2 pears?

2. How many cents are 1 cent and 1 cent?

3. If you pay 1 cent for a slate-pencil, how many cents will you pay for 3 pencils?

4. How does the price of 3 pencils compare with the price of 1 pencil?

5. If a fig costs one cent, how many times 1 cent will 4 figs cost?

6. How many chairs are 5 times 1 chair?

This sign  $\times$  takes the place of the word *times*. Thus, 2 times 1 are 2, is written  $2 \times 1 = 2$ , and is read 2 times 1 equals 2.

7. If 1 marble costs 1 cent, what will 6 marbles cost?  $6 \times 1 = 6$ .

8. Seven boys each own a sled. How many sleds do they all own?  $7 \times 1 = 7$ .

9. Each of 8 boys has a pair of skates. How many pairs do they all own?  $8 \times 1 = 8$ .

10. Nine men each own an acre of land. How many acres do they all own?  $9 \times 1 = 9$ .

11. How many are 10 times 1?  $10 \times 1 = 10$ .

12. How many are 3 times 1?  $3 \times 1 = 3$ .

13. If you pay 1 cent for an apple, how many cents will you pay for 7 apples?

14. If each pupil, in a class of 9 pupils, answers 1 question, how many questions will they all answer?

## LESSON XXXIII.

1. A horse has 2 eyes. How many eyes have 2 horses? How many eyes are 2 times 2 eyes?



2. A horse has 2 ears. How many ears have 3 horses?  $3 \times 2 = ?$

3. If 1 rocking-horse costs 2 dollars, what will 4 rocking-horses cost?  $4 \times 2 = ?$

4. If a boy goes to school only 2 days each week, how many days will he attend in 5 weeks?

5. A boy read 2 pages of his book each day for 6 days. How many pages did he read in that time?

6. If a boy earn 2 dollars a week, how many dollars will he earn in 7 weeks?  $7 \times 2 = ?$

7. What will 8 sheets of blotting-paper cost at 2 cents a sheet?  $8 \times 2 = ?$

8. What will 9 pairs of shoes cost at 2 dollars a pair?  $9 \times 2 = ?$

9. How many cents are there in 10 two-cent pieces?

10. If it requires 2 yards of cloth to make a child's cloak, how many yards will it require to make 8 such cloaks?

A short process of adding equal numbers is called **Multiplication.**

11. Form the multiplication tables of ones and twos.

## TABLES.

$1 \times 1 = 1$	$6 \times 1 = 6$	$1 \times 2 = 2$	$6 \times 2 = 12$
$2 \times 1 = 2$	$7 \times 1 = 7$	$2 \times 2 = 4$	$7 \times 2 = 14$
$3 \times 1 = 3$	$8 \times 1 = 8$	$3 \times 2 = 6$	$8 \times 2 = 16$
$4 \times 1 = 4$	$9 \times 1 = 9$	$4 \times 2 = 8$	$9 \times 2 = 18$
$5 \times 1 = 5$	$10 \times 1 = 10$	$5 \times 2 = 10$	$10 \times 2 = 20$



## LESSON XXXIV.

1. If a boy walks 3 miles in 1 hour, how many miles will he walk in 2 hours?  $2 \times 3 = ?$

2. What will 3 engravings cost at 3 dollars each?

3. Martha put 3 tulip bulbs in each of 4 pots. How many bulbs did she plant?  $4 \times 3 = ?$

4. Each of 5 boys threw 3 stones into the water. How many stones did they all throw?  $5 \times 3 = ?$

5. If the pupils learn 3 songs in a month, how many songs will they learn in 6 months?

6. If there are 3 cherries in 1 bunch, how many cherries are there in 7 such bunches?

7. If there are 8 boats, and 3 boys in each boat, how many boys are there in the boats?

8. If there are 3 globes on 1 chandelier, how many globes are there on 9 such chandeliers?

9. If a boy gives 4 cents for 1 orange, how many cents will he give for 2 oranges?  $2 \times 4 = ?$



10. A lumberman put 4 logs in the river each day for 3 days. How many logs did he put in the river? How many are 3 times 4?  $3 \times 4 = ?$

11. If there are 4 crows sitting on each of 4 limbs of a tree, how many crows are there on the tree?  $4 \times 4 = ?$  How many are 4 times 4?

12. What will 5 tons of hay cost at 4 dollars a ton?  $5 \times 4 = ?$

13.  $6 \times 4 = ?$   $7 \times 4 = ?$   $8 \times 4 = ?$   $9 \times 4 = ?$

14. How many girls are there in 10 groups of 4 girls each?  $10 \times 4 = ?$

15. If a man can walk 4 miles in an hour, how far can he walk in 6 hours?  $6 \times 4 = ?$

16. Form the multiplication tables of threes and fours.

### TABLES.

$1 \times 3 = 3$	$6 \times 3 = 18$	$1 \times 4 = 4$	$6 \times 4 = 24$
$2 \times 3 = 6$	$7 \times 3 = 21$	$2 \times 4 = 8$	$7 \times 4 = 28$
$3 \times 3 = 9$	$8 \times 3 = 24$	$3 \times 4 = 12$	$8 \times 4 = 32$
$4 \times 3 = 12$	$9 \times 3 = 27$	$4 \times 4 = 16$	$9 \times 4 = 36$
$5 \times 3 = 15$	$10 \times 3 = 30$	$5 \times 4 = 20$	$10 \times 4 = 40$

## LESSON XXXV.

1. If 1 man builds 2 rods of fence in one day, how many rods can 5 men build in the same time?

2. If a shoe-maker makes 4 pairs of shoes in 1 day, how many pairs will he make in 6 days?  
 $6 \times 4 = ?$

3. If a turner can turn 3 rolling-pins in 1 minute, how many can he turn in 8 minutes?  $8 \times 3 = ?$

4. If a woman sells 4 quarts of milk a day, how many quarts does she sell in 9 days?  $9 \times 4 = ?$

5. In 1 pint there are 4 gills. How many gills are there in 5 pints?  $5 \times 4 = ?$

6. A boy bought 4 pints of chestnuts at 3 cents a pint, and sold them for 20 cents. How much did he gain?  $4 \times 3 = ?$

7.  $(5 \times 3) + (3 \times 4) = ?$   $(4 \times 2) + (6 \times 3) = ?$

8. If a boy husks 3 bushels of corn in 1 hour, how many bushels will he husk in 7 hours?  $7 \times 3 = ?$

9. If 2 yards of lace will make 1 curtain, how many yards are required to make 4 curtains?

10. In 1 bushel there are 4 pecks. How many pecks are there in 7 bushels?  $7 \times 4 = ?$

11. How many are 9 times 2?  $7 \times 2?$   $5 \times 2?$

12. If there are 4 blades in 1 pocket-knife, how many blades are there in 10 such knives?  $10 \times 4 = ?$

13. What will be the cost of 9 historical charts at 3 dollars each?  $9 \times 3 = ?$

14. If in 1 field there are 4 acres, how many acres are there in 4 such fields?  $4 \times 4 = ?$

## SLATE EXERCISES.

Copy and multiply the following :

3	2	4	3	2	4	3	4
<u>5</u>	<u>4</u>	<u>8</u>	<u>7</u>	<u>9</u>	<u>6</u>	<u>3</u>	<u>5</u>



## LESSON XXXVI.

1. John gave 5 cents apiece to each of 2 beggars.  
How much did he give to both?  $2 \times 5 = ?$



2. If a boat sails 5 miles in 1 hour, how far will she sail in 3 hours?  $3 \times 5 = ?$

3. In each of 4 nests there are 5 eggs.  
How many eggs are there in the 4 nests?

How many are 4 times 5?  $4 \times 5 = ?$

4. What will 5 barrels of flour cost at 5 dollars a barrel?  $5 \times 5 = ?$

5. A cartman can draw 5 barrels of salt at 1 load,  
How many barrels can he draw in 6 loads? How many are 6 times 5?

6. What will 7 bunches of matches cost at 5 cents a bunch?  $7 \times 5 = ?$

7. How many are 8 times 5? How many are 9 times 5?

8. How many cents are there in 10 five-cent pieces?  $10 \times 5 = ?$

9.  $4 \times 5 = ?$   $3 \times 5 = ?$   $7 \times 5 = ?$   $8 \times 5 = ?$

10. There are 6 lamps on each of 2 shelves. How many lamps are there on both shelves?  $2 \times 6 = ?$

11. If 6 bushels of wheat can be ground in 1 hour, how many bushels can be ground in 3 hours? How many are 3 times 6?

12. If a boy writes 6 lines in his writing-book each day for 4 days, how many lines will he write? How many are 4 times 6?

13. If a man pays 6 dollars at 5 different times, how many dollars will he pay?  $5 \times 6 = ?$

14. How many are 6 times 6? How many are 7 times 6?

15. In 1 package there are 6 drawing-pencils. How many pencils are there in 8 such packages?  $8 \times 6 = ?$

16. How many are 9 times 6? 10 times 6 are how many?

17. Form the multiplication tables of fives and sixes.

## TABLES.

$1 \times 5 = 5$	$6 \times 5 = 30$	$1 \times 6 = 6$	$6 \times 6 = 36$
$2 \times 5 = 10$	$7 \times 5 = 35$	$2 \times 6 = 12$	$7 \times 6 = 42$
$3 \times 5 = 15$	$8 \times 5 = 40$	$3 \times 6 = 18$	$8 \times 6 = 48$
$4 \times 5 = 20$	$9 \times 5 = 45$	$4 \times 6 = 24$	$9 \times 6 = 54$
$5 \times 5 = 25$	$10 \times 5 = 50$	$5 \times 6 = 30$	$10 \times 6 = 60$



## LESSON XXXVII.

1. If a croquet-player drives a ball through 2 arches at each stroke, through how many arches will he drive it by 3 strokes?  $3 \times 2 = ?$

2. How many are 9 sleds, 2 sleds, and 8 sleds?

3. A boy who shot 18 prairie-chickens, gave 2 to George, 3 to Henry, and 7 to Caspar. How many had he left?  $18 - (2 + 3 + 7) = ?$

4. A man bought 6 bushels of wheat at 2 dollars a bushel, and 8 bushels of barley at 1 dollar a bushel. What did he pay for both?

5. How many soldiers are there in 4 squads of 5 soldiers each?

6.  $(6 \times 2) + (8 \times 1) = ?$   $(3 \times 5) + (4 \times 1) = ?$

7.  $(4 \times 2) + (3 \times 3) = ?$   $(2 \times 5) + (2 \times 3) = ?$

8. How many feet have 4 dogs? 7 dogs?

9. How many eyes have 6 horses? 9 horses?

10. How many legs have 6 rabbits? 8 rabbits?

11. How many wings have 10 birds? 7 birds?

12. From a bin containing 16 bushels of potatoes 4 bushels were taken at one time, and 6 at another. How many bushels remained in the bin?

13. A woman had a jar of butter, containing 20 pounds. She used 5 pounds one week, 6 pounds the next week, and the remainder the third week. How much did she use the third week?

14. There are 3 feet in 1 yard. How many feet are there in 7 yards?

15.  $10 + 6 - (4 \times 2) = ?$   $12 - 3 + (5 \times 6) = ?$

16. A drover had 6 cows in one field, 8 cows in another, and 12 in another. How many cows had he in the three fields?

17. If a girl can pick 3 quarts of berries in 1 hour, how many quarts can she pick in 3 hours?

## SLATE EXERCISES

Copy and multiply the following:

6	5	4	3	2	7	3	6	4	3
5	7	9	8	9	4	7	9	8	7
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>



## LESSON XXXVIII.

1. In 1 week there are 7 days. How many days are there in 2 weeks?  $2 \times 7 = ?$

2. How many rods of ditch were dug, if 7 rods were dug each day for 3 days?  $3 \times 7 = ?$

3. If there are 7 pickets in 1 gate, how many pickets are there in 4 such gates?  $4 \times 7 = ?$

4. How many tomatoes are there, if there are 7 tomatoes on each of 5 plants?  $5 \times 7 = ?$

5. If there are 7 flags displayed at each of 6 windows, how many flags are displayed?  $6 \times 7 = ?$

6. What will a man receive for setting 7 panes of glass at 7 cents a pane?  $7 \times 7 = ?$

7. If you can make 7 marks in 1 second, how many marks can you make in 8 seconds?  $8 \times 7 = ?$

8. If it takes 9 men 7 days to do a piece of work, how long will it take 1 man to do it?  $9 \times 7 = ?$

9. How much will Henry earn in 10 weeks, if he earns 7 dollars a week?  $10 \times 7 = ?$

10. If a woman packs 8 pounds of butter in 1 week, how much will she pack in 2 weeks?  $2 \times 8 = ?$

11. What will 3 pounds of raisins cost at 8 cents a pound?  $3 \times 8 = ?$

12. How many are 4 times 8? How many are 5 times 8?

13. If a man draws 8 loads of grain in 1 day, how many loads will he draw in 6 days?  $6 \times 8 = ?$

14. If there are 8 candles in 1 pound, how many candles are there in 7 pounds?  $7 \times 8 = ?$

15. What will 8 quarts of cherries cost at 8 cents a quart?  $8 \times 8 = ?$

16. If a cooper sells 8 barrels each day for 9 days, how many barrels will he sell?  $9 \times 8 = ?$

17. If 8 pupils can sit on 1 seat, how many pupils can sit on 10 such seats?  $10 \times 8 = ?$

18. Form the multiplication tables of sevens and eights.

## TABLES.

$1 \times 7 = 7$	$6 \times 7 = 42$	$1 \times 8 = 8$	$6 \times 8 = 48$
$2 \times 7 = 14$	$7 \times 7 = 49$	$2 \times 8 = 16$	$7 \times 8 = 56$
$3 \times 7 = 21$	$8 \times 7 = 56$	$3 \times 8 = 24$	$8 \times 8 = 64$
$4 \times 7 = 28$	$9 \times 7 = 63$	$4 \times 8 = 32$	$9 \times 8 = 72$
$5 \times 7 = 35$	$10 \times 7 = 70$	$5 \times 8 = 40$	$10 \times 8 = 80$

## LESSON XXXIX.

1. A boy having 24 cents, bought 2 oranges at 6 cents apiece. How many cents had he left?  $24 - (2 \times 6) = ?$

2. John sold 3 bananas at 8 cents apiece, and 2 cups of peanuts at 5 cents a cup. What did he receive for the whole?

3. Henry solved 7 examples on Monday, 5 on Tuesday, and 9 on Wednesday. How many examples did he solve in the three days?

4. If he solved 16 examples the next week, how many examples more did he solve the first week than the second?

5. Count to 50 by 10's. Count to 30 by 5's.

6. How many are 2 and 4? 2 and 14? 2 and 24? 2 and 34?

7. How many are 4 and 5? 4 and 15? 4 and 25? 4 and 35?

8. How many are 5 and 6? 15 and 6? 25 and 6? 35 and 6?

9. If a horse eats 3 bushels of oats in one week, how many bushels will he eat in 8 weeks?

10. What is the cost of 7 cakes of soap at 10 cents a cake?

11. A boy worked 7 weeks for 8 dollars a week, and spent 20 dollars for clothes. How much money had he left?  $(7 \times 8) - 20 = ?$

12. If a wheel has only 7 spokes, how many spokes will 7 such wheels have?



## LESSON XL.

1. A man bought 2 loaves of bread at 9 cents a loaf. How much did they cost him?  $2 \text{ times } 9 = ?$

2. If there are 9 rose-buds in one bouquet, how many rose-buds are there in 3 such bouquets?

3. If it require 9 tons of coal to run a train of cars one trip, how many tons will it require to run 4 such trips? How many are  $4 \times 9$ ?

4. In one square yard there are 9 square feet. How many square feet are there in 5 square yards?

5. At 9 dollars a barrel, what will 6 barrels of flour cost?

6. In an orchard there are 9 trees in a row, and 7 rows. How many trees are there in the orchard?

7. What will 8 pounds of nails cost at 9 cents a pound?

8. When sugar is selling at 9 cents a pound, how much will 9 pounds cost?  $9 \times 9 = ?$

9. How many cents must be paid for 10 yards of muslin at 9 cents a yard?  $10 \times 9 = ?$

10. Mary is 10 years old, and her sister is twice as old. How old is her sister?  $2 \times 10 = ?$

11. There are 10 cents in a dime. How many cents are there in 3 dimes?  $3 \times 10 = ?$





## LESSON XLI.

1. If there are 8 goslings in the water and 6 on the land, how many goslings are there altogether?

2. How many more goslings are there in the water than there are on the land?

3. Henry has 7 sheep, and his father has 9 times as many. How many sheep has his father?



4. How many sheep have Henry and his father? How many are 63 and 7?

5. An Indian sold 8 baskets at 10 cents apiece. How much did he receive for them?  $8 \times 10 = ?$

6. A boy having 6 rabbits, bought 8 more, and then sold 9. How many had he left?

7. Count to 48 by 6's. Count to 63 by 7's.

8. Count back from 45 to 0 by 9's.

9. From a crock of butter weighing 25 pounds 7 pounds were taken at one time, 3 at another, and 6 at another. How many pounds remained?

10. A laundress bought at one time 3 flat-irons, each weighing 6 pounds; at another time 2 flat-irons, each weighing 8 pounds. What was the entire weight of the irons?

11. At 8 dollars a term each, how much will a music-teacher receive for 6 pupils?  $6 \times 8 = ?$

12. There are 7 days in one week. How many days are there in 9 weeks?  $7 \times 9 = ?$   $9 \times 7 = ?$



13. If a horse trot 9 miles in one hour, how far will he travel in 10 hours?  $10 \times 9 = ?$   $9 \times 10 = ?$

14. If one passenger-car has 8 wheels, how many such wheels will 5 cars have?  $5 \times 8 = ?$   $8 \times 5 = ?$

### SLATE EXERCISES.

Copy and multiply the following:

7	8	9	6	8	9	7	8	7
5	4	3	5	9	5	6	3	2
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

### LESSON XLII.

1. A cutler sold 6 sets of knives one day, 5 sets the next day, and 8 sets the next. How many sets did he sell?

2. What is addition? What is the sign of addition?

3. A painter having 13 pounds of paint, used 6 pounds one day and 3 the next. How many pounds had he left?  $13 - (6 + 3) = ?$   $13 - 6 - 3 = ?$

4. What is subtraction? What is the sign of subtraction?

5. A farmer sold 3 sheep at 4 dollars apiece, and 6 calves at 5 dollars a head. What did he receive for the whole?  $(3 \times 4) + (6 \times 5) = ?$

6. What is multiplication? What is the sign of multiplication?



## REVIEW EXERCISES.

Find the value of the following:

$7 \times 9$	$3 \times 4$	$3 \times 8$	$8 \times 6$	$6 \times 6$
$6 \times 5$	$8 \times 5$	$5 \times 4$	$7 \times 3$	$3 \times 9$
$5 \times 8$	$6 \times 7$	$6 \times 8$	$4 \times 9$	$7 \times 5$
$4 \times 7$	$3 \times 9$	$2 \times 9$	$3 \times 5$	$8 \times 9$
$6 \times 6$	$4 \times 8$	$8 \times 8$	$8 \times 7$	$5 \times 4$
$4 \times 3$	$5 \times 5$	$7 \times 4$	$6 \times 2$	$6 \times 8$
$8 \times 2$	$6 \times 9$	$6 \times 9$	$8 \times 4$	$7 \times 4$
$7 \times 7$	$3 \times 3$	$5 \times 3$	$7 \times 7$	$5 \times 9$
$8 \times 4$	$5 \times 9$	$8 \times 9$	$5 \times 9$	$5 \times 6$
$3 \times 5$	$4 \times 4$	$5 \times 6$	$3 \times 4$	$6 \times 7$
$6 \times 6$	$3 \times 6$	$3 \times 8$	$8 \times 7$	$4 \times 9$
$5 \times 8$	$6 \times 2$	$7 \times 2$	$9 \times 4$	$8 \times 9$

Find the value of the following:

$(7+2) \times 9$	$8 \times (9-3)$	$4 \times (6+2)$
$(3+4) \times 6$	$5 \times (8+1)$	$5 \times (7+3)$
$(5+3) \times 8$	$4 \times (7-4)$	$3 \times (8-2)$
$(9+1) \times 7$	$9 \times (9-3)$	$7 \times (9+1)$
$(8-3) \times 6$	$6 \times (8+2)$	$6 \times (6-4)$
$(8+2) \times 7$	$5 \times (9-6)$	$8 \times (7+2)$
$(4+3) \times 5$	$4 \times (9-2)$	$4 \times (8+1)$
$(5+5) \times 5$	$8 \times (5+2)$	$5 \times (9-6)$
$(4+3) \times 8$	$9 \times (3+7)$	$6 \times (9-2)$
$(9-2) \times 3$	$7 \times (3+2)$	$7 \times (8+2)$
$(8-4) \times 9$	$4 \times (9-4)$	$9 \times (7+2)$
$(9-5) \times 8$	$6 \times (8-3)$	$4 \times (5+4)$

## REVIEW EXERCISES.

Copy and find the value of the following:

$2 \times 3 \times 4$	$7 + 3 \times (6 + 2)$	$4 + (3 \times 9) - 5$
$5 \times 2 \times 5$	$4 + 5 \times (9 - 3)$	$8 + (7 \times 2) \div 6$
$3 \times 2 \times 9$	$8 + 6 \times (4 - 2)$	$7 + (6 \times 4) + 2$
$2 \times 4 \times 7$	$9 + 4 \times (9 - 3)$	$6 + (8 \times 3) + 5$
$4 \times 2 \times 8$	$5 + 5 \times (8 - 5)$	$6 - (3 \times 2) + 6$
$3 \times 3 \times 6$	$4 + 3 \times (6 + 4)$	$9 - (2 \times 4) + 5$
$5 \times 2 \times 7$	$5 + 3 \times (8 + 4)$	$16 - (4 \times 3) + 5$
$4 \times 2 \times 5$	$6 + 5 \times (9 + 1)$	$20 + (2 \times 6) - 8$
$3 \times 3 \times 3$	$7 + 4 \times (8 - 3)$	$17 - (3 \times 3) + 6$
$3 \times 3 \times 9$	$4 + 6 \times (7 - 2)$	$25 - (7 \times 3) - 4$
$3 \times 2 \times 8$	$9 + 4 \times (5 + 2)$	$40 - (6 \times 3) - 8$
$2 \times 5 \times 9$	$2 + 3 \times (6 - 3)$	$29 - (4 \times 6) - 5$
$2 \times 4 \times 8$	$8 + 6 \times (8 - 6)$	$30 + (2 \times 3) - 9$
$3 \times 2 \times 6$	$6 + 4 \times (9 - 2)$	$50 - (3 \times 8) + 6$

Copy and find the value of the following:

$6 \times 8 = 40 + ?$	$3 \times 9 = 20 + ?$	$3 \times ? = 20 + 1$
$7 \times 5 = 30 + ?$	$5 \times 8 = 33 + ?$	$5 \times ? = 30 + 5$
$6 \times 4 = 18 + ?$	$7 \times 6 = 36 + ?$	$7 \times ? = 37 + 5$
$9 \times 3 = 22 + ?$	$5 \times 9 = 40 + ?$	$6 \times ? = 29 + 7$
$6 \times 8 = 39 + ?$	$6 \times 6 = 30 + ?$	$4 \times ? = 22 + 6$
$5 \times 7 = 30 + ?$	$7 \times 7 = 50 - ?$	$9 \times ? = 59 + 4$
$6 \times 6 = 40 - ?$	$8 \times 4 = 36 - ?$	$3 \times ? = 18 + 6$
$7 \times 9 = 70 - ?$	$7 \times 5 = 40 - ?$	$8 \times ? = 59 + 5$
$8 \times 8 = 60 + ?$	$9 \times 6 = 60 - ?$	$7 \times ? = 41 + 8$
$5 \times 9 = 51 - ?$	$7 \times 3 = 20 + ?$	$6 \times ? = 49 + 5$

## LESSON XLIII.

1. If Dick had 4 rabbits, how many times could he give away 2 rabbits to his companions?



2. Richard sold 6 apples, selling 2 at a time. How many times did he sell 2 apples?

3. If William had 8 cents, and spent it 2 cents at a time for candy, how many times did he purchase candy? How many 2's are there in 8?

4. How many times is 2 contained in 8?

5. If you pay 2 cents for a slate-pencil, how many can you buy for 10 cents? How many 2's are there in 10?

6. How many times is 2 contained in 10?

7. 10 is how many times 2?

Finding how many times one number is contained in another is called **Division**.

The sign  $\div$  is used to indicate division. It is read *divided by*. Thus the expression  $8 \div 4 = 2$ , is read 8 *divided by* 4 is equal to 2.

8. Read the following:  $6 \div 2 = 3$ ;  $8 \div 2 = 4$ ;  $10 \div 2 = 5$ ;  $12 \div 3 = 4$ .

9. At 2 cents apiece, how many lemons can be bought for 12 cents?  $12 \div 2 = ?$

10. If a boy earns 2 cents an hour, how long will it take him to earn 14 cents?

11. How many 2's are there in 16? In 18?

12. If I have 20 cents in two-cent pieces, how many pieces have I?

13. Form the division tables of ones and twos.

## TABLES.

$1 \div 1 = 1$	$6 \div 1 = 6$	$2 \div 2 = 1$	$12 \div 2 = 6$
$2 \div 1 = 2$	$7 \div 1 = 7$	$4 \div 2 = 2$	$14 \div 2 = 7$
$3 \div 1 = 3$	$8 \div 1 = 8$	$6 \div 2 = 3$	$16 \div 2 = 8$
$4 \div 1 = 4$	$9 \div 1 = 9$	$8 \div 2 = 4$	$18 \div 2 = 9$
$5 \div 1 = 5$	$10 \div 1 = 10$	$10 \div 2 = 5$	$20 \div 2 = 10$



## LESSON XLIV.

1. If a man walks 3 miles in one hour, in how many hours will he walk 6 miles?  $6 \div 3 = ?$

2. If a boy commits to memory 3 pages of history in one day, in how many days will he commit to memory 9 pages?  $9 \div 3 = ?$

3. At 3 cents apiece, how many lemons can be bought for 12 cents?  $12 \div 3 = ?$

4. A woman exchanged 15 pounds of butter for cloth, giving 3 pounds of butter for a yard of cloth. How many yards did she receive?  $15 \div 3 = ?$

5. A woman sells 3 quarts of milk each day. In how many days will she sell 18 quarts?  $18 \div 3 = ?$

6. In one yard there are 3 feet. How many yards are there in 21 feet?  $21 \div 3 = ?$

7. At 3 dollars a cord, how many cords of wood can be bought for 24 dollars?  $24 \div 3 = ?$

8. If a boy walks 3 miles in one hour, in how many hours will he walk 27 miles?  $27 \div 3 = ?$

9. How many times is 3 contained in 30?

10. At 4 dollars a cord, how many cords of wood can be bought for 8 dollars?

11. A man sold 12 sheep, selling 4 at a time. How many sales of sheep did he make?  $12 \div 4 = ?$

12.  $16 \div 4 = ?$   $20 \div 4 = ?$   $24 \div 4 = ?$   $28 \div 4 = ?$

13. In one pint there are 4 gills. How many pints are there in 32 gills?  $32 \div 4 = ?$

14. In one bushel there are 4 pecks. How many bushels are there in 36 pecks?  $36 \div 4 = ?$

15. In how many days will an engineer earn 40 dollars, if he earns 4 dollars a day?  $40 \div 4 = ?$

16. Form the division tables of threes and fours.

## TABLES.

$3 \div 3 = 1$	$18 \div 3 = 6$	$4 \div 4 = 1$	$24 \div 4 = 6$
$6 \div 3 = 2$	$21 \div 3 = 7$	$8 \div 4 = 2$	$28 \div 4 = 7$
$9 \div 3 = 3$	$24 \div 3 = 8$	$12 \div 4 = 3$	$32 \div 4 = 8$
$12 \div 3 = 4$	$27 \div 3 = 9$	$16 \div 4 = 4$	$36 \div 4 = 9$
$15 \div 3 = 5$	$30 \div 3 = 10$	$20 \div 4 = 5$	$40 \div 4 = 10$

## LESSON XLV.

1. If there are 6 chickens in groups containing 3 each, how many groups of chickens are there?

2. If a man earns 3 dollars a day, in how many days can he earn 12 dollars?

3. How many seats will be required to seat 21 pupils, sitting 3 on a seat?  
 $21 \div 3 = ?$

4. If a traveling agent can earn 4 dollars a day, in how many days can he earn 24 dollars at that rate?

5. 32 is how many times 4?  $32 \div 4 = ?$

6. 30 is how many times 3?  $30 \div 3 = ?$

7. A boy sold 5 pencils at 4 cents apiece, and took his pay in apples at 2 cents apiece? How many apples did he receive?  $(5 \times 4) \div 2 = ?$

8. A boy had 25 cents. He bought 2 apples at 5 cents apiece, and 2 oranges at 6 cents apiece. How many cents had he left?  $(2 \times 5) + (2 \times 6) = ?$

9. How many times 4 is 16? How many are 2 times 18?

10. A man sold 6 barrels of apples at 3 dollars a barrel, and took in exchange some cloth at 2 dollars a yard. How many yards did he receive?

11. How many times 2 acres are 6 acres?

12. How many times 4 gills are 40 gills?





## SLATE EXERCISES.

Copy and read the following:

55	89	76	54	35	72	98
79	95	84	63	55	49	100

Copy and multiply the following:

5	8	6	9	6	5	7	6	5	3
<u>7</u>	<u>4</u>	<u>5</u>	<u>2</u>	<u>3</u>	<u>5</u>	<u>8</u>	<u>9</u>	<u>8</u>	<u>9</u>

Division is also expressed by a *curved line* placed between numbers.

Copy and divide the following:

4)8    3)9    4)12    3)18    4)24    2)16

## LESSON XLVI.

1. If a boy rides one mile on the cars for 5 cents, how many miles can he ride for 10 cents?  $10 \div 5 = ?$

2. If a boat sails 5 miles in one hour, in how many hours will it sail 15 miles?  $15 \div 5 = ?$

3. At 5 dimes apiece, how many tickets can be bought for 20 dimes?  $20 \div 5 = ?$

4. In how many hours will a horse travel 25 miles, if he travels 5 miles an hour?  $25 \div 5 = ?$

5.  $30 \div 5 = ?$      $35 \div 5 = ?$      $40 \div 5 = ?$

6. Fannie attends school 5 days in a week. How many weeks will she attend if she is present 45 days?

7. How many tons of coal at 5 dollars a ton, can be bought for 50 dollars?  $50 \div 5 = ?$

8. A boy sold brackets at 2 dimes apiece, and got 12 dimes. How many did he sell?  $12 \div 2 = ?$

9. When biscuits are 6 cents a pound, how many pounds can be bought for 18 cents?  $18 \div 6 = ?$

10. If it requires 6 yards of cloth for one cloak, how many cloaks can be made from 24 yards of cloth?  $24 \div 6 = ?$

11. How long will it take a boy to read 30 pages, if he reads 6 pages every day?  $30 \div 6 = ?$

12. At 6 cents a quart, how many quarts of cherries can be bought for 36 cents?  $36 \div 6 = ?$

13. How many fields of 6 acres each can be formed out of 42 acres?  $42 \div 6 = ?$

14. If there are 6 tea-spoons in one set, how many sets will 48 tea-spoons make?  $48 \div 6 = ?$

15. If there are 6 pairs of kid gloves in one package, how many packages are there in 54 pairs? How many packages are there in 60 pairs?

16. Form the division tables of fives and sixes.

## TABLES.

$5 \div 5 = 1$	$30 \div 5 = 6$	$6 \div 6 = 1$	$36 \div 6 = 6$
$10 \div 5 = 2$	$35 \div 5 = 7$	$12 \div 6 = 2$	$42 \div 6 = 7$
$15 \div 5 = 3$	$40 \div 5 = 8$	$18 \div 6 = 3$	$48 \div 6 = 8$
$20 \div 5 = 4$	$45 \div 5 = 9$	$24 \div 6 = 4$	$54 \div 6 = 9$
$25 \div 5 = 5$	$50 \div 5 = 10$	$30 \div 6 = 5$	$60 \div 6 = 10$

## LESSON XLVII.

1. If a man earns 5 dollars in one week, in how many weeks will he earn 50 dollars?  $50 \div 5 = ?$

2. How many times can you take 6 cents out of a purse that contains 48 cents?  $48 \div 6 = ?$

3. How many times 3 apples are 12 apples?  $12 \div 3 = ?$

4. How many calves at 3 dollars each, can be bought for 18 dollars? For 21 dollars? For 24 dollars?  $18 \div 3 = ?$   $21 \div 3 = ?$   $24 \div 3 = ?$

5. There are 4 pecks in 1 bushel. How many pecks are there in 7 bushels? In 4 bushels?

6. In 32 pecks how many bushels are there?

7. A man gave to each of 4 boys 8 quails. How many quails did he give them?  $4 \times 8 = ?$

8. A clothier bought 10 coats at 5 dollars apiece, and sold them for 6 dollars apiece. How much did he gain?  $(10 \times 6) - (10 \times 5) = ?$   $10 \times (6 - 5) = ?$

9. How many bushels of potatoes at 1 dollar a bushel, must be given for 6 yards of cloth at 2 dollars a yard?

10. At 5 dollars a barrel, how many barrels of flour can be bought for 30 dollars?  $30 \div 5 = ?$

11. How many balls at 6 dimes apiece, can be bought for 54 dimes? For 30 dimes?  $54 \div 6 = ?$

12. If a cutler uses 18 blades, putting 3 blades in each knife, how many knives does he make?

13. A carman can draw 4 hogsheads of sugar at one load. How many loads will 16 hogsheads make?

## SLATE EXERCISES.

Copy and multiply the following:

5	6	3	4	8	7	5	3	2	1
5	3	8	7	5	6	4	6	8	9
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

Copy and divide the following:

$$6)\underline{42} \quad 5)\underline{35} \quad 3)\underline{21} \quad 2)\underline{18} \quad 3)\underline{27} \quad 4)\underline{36}$$

## LESSON XLVIII.

1. In one week there are 7 days. How many weeks are there in 14 days?  $14 \div 7 = ?$

2. In how many hours can Carrie solve 21 problems, if she can solve 7 per hour?  $21 \div 7 = ?$

3. Helen sold her doll for 28 cents, and spent the money for drawing-pencils, paying 7 cents for each. How many pencils did she buy?  $28 \div 7 = ?$

4. At 7 dollars a picture, how many pictures can be bought for 35 dollars?  $35 \div 7 = ?$

5. If a fish weighs 7 pounds, how many such fish will be needed to weigh 42 pounds?  $42 \div 7 = ?$

6. If a man earns 7 dollars in one week, in how many weeks will he earn 49 dollars?

7. If it requires 7 yards of cloth to make one cloak, how many cloaks can be made from 56 yards?

8. If one box holds 7 quarts of nuts, how many boxes are required to hold 63 quarts?  $63 \div 7 = ?$

9. When flour is 7 dollars a barrel, how many barrels can be bought for 70 dollars?  $70 \div 7 = ?$



10. If a railroad coach has 8 wheels, how many such coaches will have 16 wheels?  $16 \div 8 = ?$

11. At 8 cents a yard, how many yards of calico can be bought for 24 cents?  $24 \div 8 = ?$

12. If a window requires 8 panes of glass, how many windows will 32 panes make?  $32 \div 8 = ?$

13. If there are 8 trees in a row, how many rows of trees are there in an orchard containing 40 trees?  $40 \div 8 = ?$

14. How many gallons are there in 48 pints, since there are 8 pints in one gallon?  $48 \div 8 = ?$

15.  $56$  divided by  $8 = ?$   $64$  divided by  $8 = ?$

16. How many bins will be required to hold 72 bushels, if one bin holds 8 bushels?  $72 \div 8 = ?$

17. In one pile of money there are 8 cents. How many such piles are there in 80 cents?  $80 \div 8 = ?$

18. Form the division tables of sevens and eights.

### TABLES.

$7 \div 7 = 1$	$42 \div 7 = 6$	$8 \div 8 = 1$	$48 \div 8 = 6$
$14 \div 7 = 2$	$49 \div 7 = 7$	$16 \div 8 = 2$	$56 \div 8 = 7$
$21 \div 7 = 3$	$56 \div 7 = 8$	$24 \div 8 = 3$	$64 \div 8 = 8$
$28 \div 7 = 4$	$63 \div 7 = 9$	$32 \div 8 = 4$	$72 \div 8 = 9$
$35 \div 7 = 5$	$70 \div 7 = 10$	$40 \div 8 = 5$	$80 \div 8 = 10$

## LESSON XLIX.

1. If 8 bushels of potatoes are needed to plant one acre of ground, how many acres will be planted if 40 bushels are used?  $40 \div 8 = ?$

2. If a blacksmith makes 6 horseshoes in one day, in how many days can he make 60 horseshoes?

3. If a man paid 5 dollars for taking one trip on the cars, how many such trips could he take for 30 dollars?  $30 \div 5 = ?$

4. In a school of 56 pupils there are 7 pupils in each class. How many classes are there?  $56 \div 7 = ?$

5. In one pint there are 4 gills. How many pints are there in 36 gills?  $36 \div 4 = ?$

6. In one yard there are 3 feet. How many yards are there in 21 feet? In 30 feet? In 12 feet?

7. If one ball costs 2 dimes, how many balls can be bought for 6 dimes? For 12 dimes? For 18 dimes?

8. How many oranges at 5 cents apiece must be given for 3 dozen of eggs at 10 cents a dozen?

9. How many sleds at 3 dollars apiece can be bought for 27 dollars?  $27 \div 3 = ?$

10. How many yards of calico at 8 cents a yard must be given for 10 pounds of maple sugar at 8 cents a pound?  $(10 \times 8) \div 8 = ?$

11. If there are 4 pecks in one bushel, how many bushels are there in 40 pecks?

12. How many 7's are there in 63? In 49?

13. How many 6's are there in 54? In 48?

## SLATE EXERCISES.

Copy and multiply the following :

6	8	7	8	4	6	8	7	5
<u>4</u>	<u>2</u>	<u>3</u>	<u>5</u>	<u>2</u>	<u>5</u>	<u>3</u>	<u>6</u>	<u>9</u>

Copy and divide the following :

$$7 \overline{)70} \quad 8 \overline{)64} \quad 5 \overline{)50} \quad 4 \overline{)32} \quad 5 \overline{)40} \quad 7 \overline{)28}$$



## LESSON L.

1. If one dress can be made from 9 yards of cloth, how many dresses can be made from 18 yards?  
 $18 \div 9 = ?$

2. If a painter can paint 9 boards of fence in one hour, in how many hours can he paint 27 boards?  
 $27 \div 9 = ?$

3. There are 9 square feet in 1 square yard. How many square yards are there in 36 square feet? In 45 square feet?  $36 \div 9 = ?$   $45 \div 9 = ?$

4. If there are 9 candles in one pound, how many pounds are there in 54 candles?  $54 \div 9 = ?$

5. A man gave 63 bushels of corn to poor families, giving 9 bushels to each family. How many families were relieved?  $63 \div 9 = ?$

6. If you travel 9 miles in one hour, in how many hours will you travel 72 miles? 81 miles?

7. 90 is how many times 9?  $90 \div 9 = ?$

8. If it requires 10 pickets to make one gate, how many such gates can be made using 20 pickets?  $20 \div 10 = ?$

9. How many ten-cent pieces are there in 30 cents?  $30 \div 10 = ?$

10. There are 10 cents in one dime. How many dimes are there in 40 cents?  $40 \div 10 = ?$

11. If a man can drill 10 feet per day, how many days will it take him to drill 50 feet?  $50 \div 10 = ?$

12. James bought a Christmas gift for 60 cents, paying for it with ten-cent pieces. How many ten-cent pieces did he give for it?  $60 \div 10 = ?$

13. How many hours will it take a steamboat to make a trip of 70 miles, if it travels 10 miles in one hour?  $70 \div 10 = ?$

14. How many pupils, at 10 dollars a term, must a teacher instruct to receive 80 dollars?  $80 \div 10 = ?$

15. At 10 cents a pound, how many pounds of starch can be bought for 90 cents?  $90 \div 10 = ?$

16. How many tens are there in 100?

17. Form the division tables of nines and tens.

## TABLES.

$9 \div 9 = 1$	$54 \div 9 = 6$	$10 \div 10 = 1$	$60 \div 10 = 6$
$18 \div 9 = 2$	$63 \div 9 = 7$	$20 \div 10 = 2$	$70 \div 10 = 7$
$27 \div 9 = 3$	$72 \div 9 = 8$	$30 \div 10 = 3$	$80 \div 10 = 8$
$36 \div 9 = 4$	$81 \div 9 = 9$	$40 \div 10 = 4$	$90 \div 10 = 9$
$45 \div 9 = 5$	$90 \div 9 = 10$	$50 \div 10 = 5$	$100 \div 10 = 10$





## LESSON LI.

1. If there are 5 monkeys on one branch of a tree, 4 on another, and 3 on another, how many monkeys are there on the tree?  $5 + 4 + 3 = ?$

2. How many more than 5 monkeys are 7 monkeys?  $7 - 5 = ?$

3. How many more than 4 monkeys are 8 monkeys?  $8 - 4 = ?$

4. How many more than 3 monkeys are 9 monkeys?  $9 - 3 = ?$

5. If you have 5 apples, how many more must you get to have 12 apples?  $5 + ? = 12$ .

6. Mary is 6 years old, and her brother is 15. In how many years will Mary be as old as her brother is now?  $6 + ? = 15$ .

7. In one week there are 7 days. How many days are there in 4 weeks?  $4 \times 7 = ?$

8. Into how many groups of 5 oranges each can you divide 15 oranges?  $15 \div 5 = ?$

9. How many are 2 times 8? 4 times 8? 6 times 8?

10. How many times is 8 contained in 24? In 40? In 64?

11. If a cow gives 9 quarts of milk in the morning, and 10 quarts at night, how many quarts does she give in one day?

12. George having 20 cents, paid 6 cents for candy and 8 cents for peanuts. How many cents had he left?

13. If one lily has three petals, how many petals have 9 lilies?

14.  $4 + 8 + 2 = ?$   $9 + 7 + 3 = ?$   $28 - 3 - 6 = ?$   
 $19 - 4 = ?$   $7 + 8 - 6 = ?$

15.  $7 \times 7 = ?$   $9 \times 8 = ?$   $45 \div 5 = ?$   $90 \div 10 = ?$

16. In one dime there are 10 cents. How many cents are there in 4 dimes?  $4 \times 10 = ?$

17. Mary bought 4 pencils at 5 cents apiece, and a drawing-book for 25 cents. What was the total cost of her purchases?

18. How many are 6 and 8? 16 and 8? 26 and 8? 36 and 8? 46 and 8? 56 and 8?

19. How many are 4 and 9? 14 and 9? 24 and 9? 34 and 9? 44 and 9? 54 and 9?

20. Count to 32 by 4's. Count to 54 by 6's.

21. Count to 90 by 9's. Count to 72 by 8's.

22. Count to 40 by 5's. Count to 63 by 7's.

23. How many 8's are there in 80?  $80 \div 8 = ?$

24. How many 7's are there in 49?  $49 \div 7 = ?$

25. How many 6's are there in 54?  $54 \div 6 = ?$

## LESSON LII.

1. Henry takes 9 steps in crossing the room once. How many times will he cross the room in taking 54 steps?  $54 \div 9 = ?$

2. If a man works 10 hours in one day, how many hours will he work in 8 days?  $8 \times 10 = ?$

3. If a man works 10 hours in one day, in how many days will he work 100 hours?  $100 \div 10 = ?$

4. Count to 27 by 3's. Count to 48 by 4's.

5. How many times is 5 contained in 30? In 45?

6. How many five-dollar bills will be required to pay for 5 tons of coal at 4 dollars a ton?

7. A boy having 50 cents, paid 30 cents for a ball and 15 cents for a bat. How many cents had he left?  $50 - 30 - 15 = ?$

8. When clover seed is 8 dollars a bushel, how many bushels can be bought for 48 dollars? For 56 dollars?  $48 \div 8 = ?$   $56 \div 8 = ?$

9. In one square yard there are 9 square feet. How many square feet are there in 6 square yards?

10. 36 is how many times 4? How many times 6? How many times 9?

11. 24 is how many times 8? How many times 6? How many times 4?

12. In an orchard there are 56 trees and 7 trees in a row. How many rows are there?  $56 \div 7 = ?$

13. In one yard there are 3 feet. How many feet are there in 8 yards? In 6 yards? In 9 yards?

14. A house has 10 windows, and 8 panes of glass in each window. How many panes of glass are there in the house?  $10 \times 8 = ?$

15. How many are  $6 + 4 + 5$ ?  $8 + 3 + 7$ ?

16. How many are 12 and 5? 22 and 5? 32 and 5? 42 and 5? 52 and 5? 62 and 5?

17. How many are 8 less 5? 18 less 5? 28 less 5? 38 less 5? 48 less 5? 58 less 5?

18. Two men start from the same place and travel in opposite directions, one at the rate of 6 miles an hour, and the other at the rate of 4 miles an hour. How far apart are they in 5 hours?



### LESSON LIII.

1. If a blacksmith uses 8 nails in setting one horseshoe, how many nails will he use in setting 8 horseshoes?  $8 \times 8 = ?$

2. If one horse requires 4 horseshoes, how many horseshoes will be needed for 5 horses? For 6 horses?  $5 \times 4 = ?$

3. How many times is 7 contained in 21? In 49? In 56?

4. How much can a wagoner earn in 9 days, if he earns 4 dollars per day?  $9 \text{ times } 4 = ?$



5. How many are 4 times 7? 5 times 7? 9 times 7?

6. How many crows are 5 crows, 3 crows, 6 crows, and 2 crows?

7. How many more than 10 crows are 18 crows?

8. How many more than 6 pens are 18 pens?

9. How many ten-dollar bills must be given for 8 boxes of handkerchiefs at 5 dollars a box?

10.  $6 + 7 - 4 = ?$   $8 + 5 - 7 = ?$   $9 + 3 - 6 = ?$

11.  $(7 \times 4) \div 2 = ?$   $(8 \times 6) \div 4 = ?$   $(6 \times 6) \div 9 = ?$

12. A farmer having 18 bushels of corn sold 5 bushels to one man and 3 to another. How many bushels had he left?  $18 - (5 + 3) = ?$

13. A woman put 20 quarts of strawberries into cans, putting two quarts into each can. How many cans did she use?  $20 \div 2 = ?$

14. In one pint there are 4 gills. How many gills are there in 7 pints?  $7 \times 4 = ?$

15. In one gallon there are 4 quarts. How many gallons are there in 16 quarts?  $16 \div 4 = ?$

16. In a school-room there are 48 desks arranged in rows containing 8 desks each. How many rows of desks are there in the room?  $48 \div 8 = ?$

17. A farmer sold some grain for 40 dollars, and took his pay in sheep at 5 dollars a head. How many sheep did he receive?  $40 \div 5 = ?$

18. How many dozens of eggs at 10 cents a dozen will pay for 6 yards of calico at 5 cents a yard?

19. If there are 6 forks in one set, how many forks are there in 9 sets?  $9 \times 6 = ?$   $6 \times 9 = ?$

## LESSON LIV.

1. If a basket-maker can make 7 dinner-baskets in one day, in how many days can he make 42 such baskets?

2. If one dining-table has 4 legs, how many legs have 9 such dining-tables?  $9 \times 4 = ?$

3. What will be the cost of 2 tops at 10 cents apiece, and 6 oranges at 5 cents each?

4. In one dime there are 10 cents. How many dimes are there in 90 cents? In 70 cents? In 40 cents?

5. How many cents are there in 5 dimes? In 8 dimes? In 9 dimes?

6. What is the difference in the cost of 6 peaches at 3 cents apiece, and 6 apples at 2 cents apiece?

7.  $8 + 2 + 5 = ?$   $17 - (8 + 4) = ?$   $25 - (5 + 2) = ?$

8.  $(3 \times 2) + (7 \times 3) = ?$   $27 \div (3 \times 3) = ?$

9. At 5 dollars apiece, how many hats can be bought for 25 dollars?

10. In one gallon there are 4 quarts. How many quarts are there in 4 gallons?

11. If one fish weighs 9 pounds, how many such fish will weigh 81 pounds?  $81 \div 9 = ?$

12. If there are 3 joiners' planes on one bench, 8 on another, and 5 on another, how many planes are there on the 3 benches?

13. In a class, 36 questions were answered, each pupil answering 4 questions. How many pupils were there in the class?  $36 \div 4 = ?$

14. There are 9 pins in the pin-cushion, 12 on the paper, and 5 in the box. How many pins are there in all?  $9 + 12 + 5 = ?$

15. A tailor earned 12 dollars one week, and 15 dollars the next, and after paying his expenses had 8 dollars left. How much money did he expend?  $(12 + 15) - 8 = ?$

16. How many more than 5 times 4, is 30?

17. How many more than 6 times 3, is 24?

18. How many are  $7 + 3 + 5$  divided by 3? Divided by 5?

19. How many are  $7 + 9 + 2$  divided by 6? Divided by 3?

### SLATE EXERCISES.

Copy and add the following:

3	2	2	3	5	5	3	7	5
4	3	5	2	8	7	6	2	6
7	4	4	5	6	4	5	1	7
6	7	9	4	4	2	4	4	2
<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>

Copy and multiply the following:

8	6	7	9	8	7	6	9	8
5	9	5	3	8	8	7	4	9
<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>

Copy and divide the following:

6) <u>36</u>	8) <u>48</u>	8) <u>72</u>	9) <u>81</u>	7) <u>70</u>
--------------	--------------	--------------	--------------	--------------

$24 \div 6$	$36 \div 4$	$27 \div 9$	$35 \div 5$
$42 \div 6$	$50 \div 5$	$56 \div 8$	$60 \div 6$

## REVIEW EXERCISES.

Find the value of the following:

$81 \div 9$	$28 \div 4$	$30 \div 3$	$35 \div 5$	$28 \div 4$
$45 \div 5$	$18 \div 9$	$16 \div 2$	$16 \div 4$	$21 \div 7$
$36 \div 6$	$25 \div 5$	$45 \div 5$	$27 \div 9$	$40 \div 5$
$72 \div 8$	$15 \div 3$	$24 \div 8$	$24 \div 3$	$54 \div 9$
$40 \div 5$	$18 \div 2$	$36 \div 9$	$18 \div 2$	$56 \div 8$
$27 \div 3$	$36 \div 4$	$32 \div 4$	$64 \div 8$	$16 \div 2$
$18 \div 6$	$28 \div 7$	$35 \div 5$	$54 \div 6$	$36 \div 6$
$24 \div 4$	$30 \div 6$	$48 \div 6$	$45 \div 5$	$45 \div 9$
$20 \div 2$	$64 \div 8$	$35 \div 7$	$63 \div 9$	$30 \div 5$
$32 \div 8$	$81 \div 9$	$40 \div 8$	$35 \div 7$	$36 \div 4$
$63 \div 7$	$20 \div 2$	$32 \div 4$	$28 \div 4$	$48 \div 8$
$60 \div 6$	$56 \div 8$	$12 \div 2$	$27 \div 3$	$24 \div 6$

Find the value of the following:

$(25 - 5) \div 4$	$(37 - 2) \div 5$	$21 \div (5 + 2)$
$(36 + 6) \div 7$	$(49 - 7) \div 7$	$36 \div (7 + 2)$
$(41 + 7) \div 6$	$(33 + 3) \div 4$	$48 \div (2 + 4)$
$(51 + 3) \div 9$	$(80 - 8) \div 9$	$32 \div (3 + 5)$
$(67 + 5) \div 8$	$(60 - 6) \div 6$	$35 \div (9 - 2)$
$(18 + 3) \div 3$	$(33 + 7) \div 8$	$28 \div (8 - 4)$
$(28 + 4) \div 4$	$(18 + 3) \div 3$	$27 \div (6 - 3)$
$(29 + 7) \div 6$	$(22 + 5) \div 9$	$63 \div (7 + 2)$
$(13 + 3) \div 2$	$(43 + 6) \div 7$	$45 \div (2 + 3)$
$(60 - 4) \div 8$	$(21 + 3) \div 6$	$56 \div (3 + 4)$
$(47 - 2) \div 5$	$(31 + 5) \div 4$	$49 \div (2 + 5)$
$(33 + 3) \div 4$	$(32 + 3) \div 5$	$72 \div (6 + 3)$



## REVIEW EXERCISES.

Copy and find the value of the following:

$(48 \div 8) \div 2$	$(6 + 15) \div (6 - 3)$	$4 + (16 \div 4) - 6$
$(81 \div 9) \div 3$	$(8 + 24) \div (9 - 1)$	$7 + (35 \div 5) - 4$
$(56 \div 7) \div 4$	$(7 + 18) \div (7 - 2)$	$8 - (36 \div 9) + 2$
$(70 \div 7) \div 5$	$(8 + 28) \div (5 + 4)$	$9 + (81 \div 9) - 6$
$(36 \div 6) \div 3$	$(9 + 36) \div (3 + 2)$	$7 + (32 \div 4) - 3$
$(20 \div 5) \div 2$	$(8 + 40) \div (7 - 1)$	$3 + (49 \div 7) - 5$
$(48 \div 6) \div 4$	$(6 + 30) \div (8 - 4)$	$6 + (64 \div 8) - 4$
$(54 \div 6) \div 3$	$(3 + 27) \div (7 + 3)$	$5 - (45 \div 5) + 4$
$(36 \div 9) \div 2$	$(8 + 24) \div (3 + 5)$	$9 - (42 \div 6) - 2$
$(70 \div 7) \div 2$	$(7 + 43) \div (2 + 3)$	$8 + (16 \div 4) - 6$
$(54 \div 9) \div 3$	$(9 + 40) \div (5 + 3)$	$9 + (21 \div 7) - 6$
$(64 \div 8) \div 4$	$(6 + 54) \div (5 + 1)$	$3 + (64 \div 8) - 7$
$(56 \div 7) \div 2$	$(8 + 72) \div (7 + 3)$	$3 + (63 \div 9) - 9$
$(72 \div 8) \div 3$	$(9 + 47) \div (2 + 5)$	$8 + (60 \div 6) - 5$

Copy and find the value of the following:

$45 \div 5 = 6 + ?$	$27 \div 3 = 6 + ?$	$45 \div ? = 6 + 3$
$32 \div 4 = 5 + ?$	$54 \div 6 = 5 + ?$	$36 \div ? = 4 + 2$
$81 \div 9 = 3 + ?$	$80 \div 8 = 7 + ?$	$72 \div ? = 6 + 3$
$72 \div 9 = 6 + ?$	$63 \div 9 = 3 + ?$	$70 \div ? = 6 + 4$
$60 \div 6 = 8 + ?$	$21 \div 3 = 4 + ?$	$42 \div ? = 3 + 4$
$49 \div 7 = 4 + ?$	$14 \div 2 = 6 + ?$	$40 \div ? = 1 + 3$
$36 \div 4 = 3 + ?$	$64 \div 8 = 5 + ?$	$54 \div ? = 4 + 2$
$27 \div 3 = 4 + ?$	$35 \div 5 = 5 + ?$	$48 \div ? = 5 + 3$
$16 \div 2 = 6 + ?$	$42 \div 7 = 3 + ?$	$35 \div ? = 6 + 1$
$24 \div 6 = 3 + ?$	$48 \div 6 = 2 + ?$	$70 \div ? = 8 + 2$

# FRACTIONS

## LESSON LV.

1. Into how many parts has one of the apples in the picture been divided?

2. How do these two parts compare in size?

3. What is one of these two equal parts called?

*One-half.*

4. How many halves of the apple make the whole apple?

5. Into what number of parts is one of the pears divided?

6. How do these three parts compare in size?

7. What is one of these three equal parts called?

*One-third.*

8. What are two of these three equal parts called?

9. How many thirds are there in the whole pear?

10. Into how many parts has one of the oranges in the picture been divided?

11. How do these four parts compare in size?



12. What is one of these four equal parts called?  
*One-fourth.*

13. What are two of the parts called? What are three of the parts called?

14. How many fourths are there in the whole orange?

One or more of the equal parts of any thing is called a *Fraction*.

Two numbers written one above the other, with a line between them, are used to express a fraction.

The number below the line shows the number of equal parts into which the thing is divided.

It is called the *Denominator*.

The number above the line shows how many parts form the fraction.

It is called the *Numerator*.

*One-half* is therefore expressed thus:  $\frac{1}{2}$ .

*One-third* is therefore expressed thus:  $\frac{1}{3}$ .

*One-fourth* is therefore expressed thus:  $\frac{1}{4}$ .

*Two-fourths* is therefore expressed thus:  $\frac{2}{4}$ .

*Three-fourths* is therefore expressed thus:  $\frac{3}{4}$ .

### SLATE EXERCISES.

Copy and read the following:

$\frac{1}{4}$        $\frac{1}{2}$        $\frac{1}{3}$        $\frac{2}{3}$        $\frac{2}{4}$        $\frac{3}{4}$

Express in figures the following:

One-half	Two-thirds	One-fourth
One-third	Three-fourths	Two-fourths

## LESSON LVI.

One Fifth	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$
--------------	---------------	---------------	---------------	---------------

One Sixth	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$
--------------	---------------	---------------	---------------	---------------	---------------

1. Draw a line and divide it into 5 equal parts.
2. What is one of these parts called? *One-fifth.*
3. What are two of the parts called? What are four of the parts called?
4. How many fifths make the whole line?
5. Draw a line and divide it into 6 equal parts.
6. What is one of these parts called? *One-sixth.*
7. What are three of the parts called? What are five of the parts called?
8. How many sixths make the whole line?
9. If a pie is divided into seven equal pieces, what part of the pie is one piece? Three pieces? Four pieces? How many sevenths make the whole pie?
10. If a pound of candy is equally divided among eight boys, what part of the pound will one boy receive?
11. How many eighths of it will four boys receive? Three boys? Six boys
12. A miller divided a barrel of flour equally among nine poor families. What part of the barrel of flour did he give to each family?
13. How many parts did he give to five families? To eight families?
14. If a dollar is divided into ten equal parts, what is one of the parts called? What are four of the parts called? What are ten of the parts called?

## SLATE EXERCISES.

Copy and read the following :

$\frac{3}{8}$	$\frac{4}{7}$	$\frac{2}{3}$	$\frac{1}{2}$	$\frac{6}{9}$	$\frac{8}{9}$	$\frac{7}{10}$	$\frac{5}{6}$	$\frac{3}{4}$
$\frac{1}{3}$	$\frac{1}{5}$	$\frac{7}{9}$	$\frac{6}{7}$	$\frac{3}{8}$	$\frac{4}{5}$	$\frac{8}{10}$	$\frac{2}{6}$	$\frac{5}{8}$

Express in figures the following :

3 fifths	4 fifths	3 eighths
3 sixths	2 thirds	5 eighths
5 tenths	8 tenths	6 eighths
2 ninths	7 ninths	5 sevenths



## LESSON LVII.

1. Mary had 1 half of a dollar, and her mother gave her 1 half of a dollar more. How much money had she then?

2. How many thirds are 1 third and 2 thirds?

3. If John gave  $\frac{1}{4}$  of an orange to his sister, and  $\frac{2}{4}$  to his cousin, how many fourths did he give both?

4. Henry earned  $\frac{1}{5}$  of a dollar in one day, and  $\frac{2}{5}$  of a dollar the next day. How much money did he earn in both days? How many fifths are  $\frac{1}{5}$  and  $\frac{2}{5}$ ?

5. Jane bought  $\frac{3}{6}$  of a yard of ribbon, and Caroline bought  $\frac{2}{6}$  of a yard? How many sixths did both buy? How many sixths are  $\frac{1}{6}$ ,  $\frac{4}{6}$  and  $\frac{1}{6}$ ?

6. A farmer sold  $\frac{2}{7}$  of a bin of wheat to one man, and  $\frac{3}{7}$  to another. How many sevenths did he sell?

7. How many eighths are  $\frac{3}{8}$ ,  $\frac{2}{8}$  and  $\frac{1}{8}$ ?

8. William bought  $2\frac{1}{4}$  yards of cloth for a pair of pantaloons,  $\frac{3}{4}$  of a yard for a vest, and  $4\frac{1}{4}$  yards for a coat. How many yards of cloth did he buy?

9. A man plowed  $1\frac{3}{10}$  acres one day, and  $1\frac{4}{10}$  acres the next day. How many acres did he plow?

10. A laborer bought  $\frac{3}{8}$  of a ton of coal at one time,  $\frac{2}{8}$  of a ton at another, and  $\frac{1}{8}$  of a ton at another. How much coal did he buy?

## SLATE EXERCISES.

Copy and add the following:

$$\frac{1}{3} + \frac{2}{3} + \frac{1}{3}$$

$$\frac{5}{7} + \frac{1}{7} + \frac{2}{7}$$

$$\frac{3}{8} + \frac{5}{8} + \frac{1}{8}$$

$$\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$$

$$\frac{4}{9} + \frac{3}{9} + \frac{5}{9}$$

$$\frac{2}{6} + \frac{3}{6} + \frac{4}{6}$$



## LESSON LVIII.

1. Lucy had  $\frac{1}{2}$  of a dollar, and her brother gave her  $\frac{1}{4}$  of a dollar more. How much money did she have then?

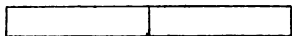
2. How many halves of a dollar are equal to one dollar?

3. How many fourths of a dollar are equal to one dollar?



4. How many fourths of a dollar are equal to one-half of a dollar? How many fourths are there in  $\frac{1}{2}$ ?

5. How many fourths of a dollar are there in  $\frac{1}{2}$  and  $\frac{1}{4}$  of a dollar? How many fourths in  $\frac{1}{2}$  and  $\frac{1}{4}$ ?



6. Draw two lines of the same length.



7. Divide the first line into 2 equal parts.

8. Divide the second line into 6 equal parts.

9. What is one part of the first line called?

10. What is one part of the second line called?

11. What are three parts of the second line called?

12. How do three parts of the second line compare in length with one part of the first line?

13. How many sixths of a line are equal to one-half of a line?

14. How many sixths are there in  $\frac{1}{2}$  and  $\frac{1}{3}$ ? How many sixths are there in  $\frac{1}{2}$  and  $\frac{2}{3}$ ? In  $\frac{1}{2}$  and  $\frac{5}{6}$ ?

15. How many eighths are equal to one-fourth? How many eighths are there in  $\frac{1}{4}$  and  $\frac{3}{8}$ ?

16. Mary bought  $2\frac{1}{3}$  yards of lace one day, and  $2\frac{1}{6}$  yards the next day. How many yards did she buy?

17. John bought  $2\frac{1}{4}$  pounds of raisins, and Joseph bought  $3\frac{3}{8}$  pounds. How many pounds did they buy?

18. How many ninths are  $\frac{1}{3}$  and  $\frac{1}{9}$ ?  $\frac{2}{3}$  and  $\frac{2}{9}$ ?

19. How many eighths are  $\frac{1}{4}$  and  $\frac{3}{8}$ ?

### SLATE EXERCISES.

Copy and add the following:

$$\frac{2}{3} + \frac{4}{9} + \frac{2}{9}$$

$$\frac{1}{2} + \frac{5}{8} + \frac{3}{8}$$

$$\frac{1}{8} + \frac{2}{8} + \frac{2}{8}$$

$$\frac{1}{3} + \frac{1}{6} + \frac{2}{3}$$

$$\frac{1}{2} + \frac{2}{4} + \frac{3}{8}$$

$$\frac{1}{6} + \frac{3}{6} + \frac{2}{6}$$

## LESSON LIX.

1. Henry had 3 fourths of an orange, but gave 1 fourth of it to his cousin. How much had he left?

2. If a boy had  $\frac{3}{8}$  of a pound of candy, but gave  $\frac{1}{8}$  of it away, how much had he left?  $\frac{3}{8} - \frac{1}{8} = ?$

3. If I have  $\frac{3}{4}$  of a dollar, and spend  $\frac{1}{4}$  of a dollar, what part of a dollar will I have left?

4. A girl having  $\frac{5}{10}$  of a dollar, paid  $\frac{3}{10}$  of a dollar for thread. How much had she left?

5. From  $\frac{5}{7}$  take  $\frac{2}{7}$ . From  $\frac{5}{8}$  take  $\frac{1}{8}$ .

6. If Julia divides a loaf of cake into 8 equal parts, and gives away  $\frac{3}{8}$  of it, how many eighths will she have left?

7. A man chopped  $\frac{5}{9}$  of a cord of wood in the forenoon, and  $\frac{3}{9}$  of a cord in the afternoon. How much more did he chop in the afternoon than in the forenoon?  $\frac{3}{9} - \frac{5}{9} = ?$

8. Gilbert owns  $\frac{3}{4}$  of a boat, and Carl the remainder. What part does Carl own?

9. Oscar bought a pair of skates for  $\frac{7}{10}$  of a dollar, and sold them for  $\frac{5}{10}$  of a dollar. What part of a dollar did he lose?  $\frac{7}{10} - \frac{5}{10} = ?$

10. How much more than  $\frac{2}{8}$  of a pound is  $\frac{5}{8}$  of a pound?  $\frac{5}{8} - \frac{2}{8} = ?$

11. In a school  $\frac{5}{9}$  of the pupils are girls, and the rest are boys. What part of the school is boys?

12. How many more than  $3\frac{1}{2}$  are  $8\frac{1}{2}$ ?

13. A grocer having  $10\frac{3}{8}$  pounds of butter, sold 4 pounds of it. How much had he left?



14. A tailor had  $12\frac{7}{8}$  yards of cloth, and sold  $3\frac{5}{8}$  yards. How many yards had he left?

## SLATE EXERCISES.

Copy and subtract the following :

$$\begin{array}{cccc} \frac{4}{6} - \frac{1}{6} & \frac{7}{8} - \frac{2}{8} & \frac{6}{9} - \frac{3}{9} & \frac{4}{5} - \frac{1}{5} \\ 6\frac{2}{10} - 2\frac{2}{10} & 3\frac{1}{6} - 1\frac{1}{6} & 8\frac{3}{4} - 2\frac{1}{4} & 9\frac{6}{7} - 3\frac{3}{7} \end{array}$$



## LESSON LX.

1. Into how many parts is the first melon in the picture cut? How do the parts compare in size?



2. Into how many equal parts is each of the halves of the second melon cut?

3. How many such parts are there in the two halves, or the whole melon?

4. What are these parts called?

5. How many sixths are there in one-half?

6. From  $\frac{1}{2}$  subtract  $\frac{1}{6}$ . From  $\frac{1}{2}$  subtract  $\frac{2}{6}$ .

7. Draw a line and divide it into 3 equal parts.

8. Draw another line of the same length, and divide it into 3 equal parts.

9. Divide each part of the second line into 3 equal parts.

10. How many of these smaller parts are there in the whole line? What are these parts called?

11. How many ninths are there in one third?
12. How many ninths are there in two thirds?
13. From  $\frac{1}{3}$  of an orange take  $\frac{2}{3}$  of an orange.
14. Belle having  $\frac{3}{4}$  of a yard of velvet, gave away  $\frac{2}{3}$  of a yard. How much had she left?
15. A grocer who had  $\frac{1}{2}$  of a barrel of beans, sold  $\frac{2}{3}$  of a barrel. What part of a barrel did he have left?
16. How many tenths of a dollar are there in one-fifth of a dollar? In two-fifths?
17. From  $\frac{3}{4}$  of an hour take  $\frac{3}{10}$  of an hour.
18. A milliner having  $4\frac{3}{4}$  yards of silk, used  $2\frac{3}{8}$  yards. How many had she left?

## SLATE EXERCISES.

Copy and subtract the following:

$\frac{1}{2} - \frac{1}{6}$	$\frac{2}{4} - \frac{2}{8}$	$\frac{3}{8} - \frac{4}{9}$	$\frac{4}{5} - \frac{2}{10}$
$5\frac{1}{2} - 2\frac{1}{8}$	$6\frac{2}{3} - 3\frac{1}{6}$	$5\frac{1}{4} - 2\frac{1}{8}$	$7\frac{2}{5} - 1\frac{1}{10}$
$4\frac{2}{3} - 2\frac{1}{6}$	$5\frac{1}{4} - 2\frac{1}{8}$	$5\frac{1}{2} - 3\frac{1}{8}$	$6\frac{1}{5} - 6\frac{1}{10}$

## LESSON LXI.

1. Clara had a yard of cambric. She gave Grace  $\frac{1}{4}$  of it, and Lizzie  $\frac{3}{8}$  of it. How much had she left?
2. A bushel of wheat was divided among three persons. One received  $\frac{1}{3}$  of it, another  $\frac{1}{2}$  of it, and the third the rest. What part did the third person receive?

3. George paid  $\frac{2}{10}$  of a dollar for a slate,  $\frac{3}{8}$  of a dollar for a reading-book, and  $\frac{1}{8}$  of a dollar for a writing-book. What did he pay for all?

4. A man dug  $\frac{2}{8}$  of a ditch one day,  $\frac{1}{8}$  of it the second day, and the rest of it the third day. What part of the ditch did he dig the third day?

5. From  $\frac{1}{2} + \frac{3}{8}$  take  $\frac{1}{4}$ . From  $\frac{1}{4} + \frac{1}{2}$  take  $\frac{1}{8}$ .

6. From  $\frac{2}{8} + \frac{1}{8}$  take  $\frac{1}{8}$ . From  $\frac{2}{8} + \frac{1}{8}$  take  $\frac{5}{8}$ .

7. To the difference between  $\frac{2}{8}$  and  $\frac{2}{8}$  add  $\frac{1}{2}$ .

8. To the difference between  $\frac{7}{10}$  and  $\frac{2}{8}$  add  $\frac{1}{8}$ .

9.  $\frac{2}{8} + \frac{1}{2} + \frac{3}{8} - \frac{2}{8} = ?$   $\frac{1}{2} + \frac{2}{4} + \frac{2}{8} - \frac{1}{2} = ?$

10. Peter had  $\frac{2}{8}$  of a dollar. His father gave him  $\frac{2}{10}$  more, and his mother gave him enough to make the dollar. How much did his mother give him?

11. James paid  $\frac{1}{2}$  of a dollar for a book,  $\frac{1}{4}$  of a dollar for a slate, and  $\frac{2}{8}$  of a dollar for writing-paper. How much did he pay for all?  $\frac{1}{2} + \frac{1}{4} + \frac{2}{8} = ?$

12. How much more did he pay for the book than for the slate?  $\frac{1}{2} - \frac{1}{4} = ?$

13.  $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{8} = ?$   $\frac{1}{2} + \frac{3}{8} + \frac{3}{4} + \frac{1}{8} = ?$

14. William owns  $\frac{3}{4}$  of a sled, and his brother the remainder. What part of the sled does his brother own?

### SLATE EXERCISES.

Find the value of the following:

$$7\frac{1}{2} + 6\frac{2}{8} \quad 3\frac{2}{4} + 5\frac{1}{8} \quad 4\frac{3}{8} + 6\frac{2}{10} \quad 8\frac{5}{8} + 10\frac{3}{8}$$

$$6\frac{5}{8} - 5\frac{2}{4} \quad 8\frac{1}{2} - 4\frac{2}{8} \quad 6\frac{4}{8} - 3\frac{1}{10} \quad 10\frac{4}{8} - 4\frac{1}{8}$$

$$2\frac{3}{8} + 3\frac{1}{2} \quad 5\frac{3}{8} + 3\frac{1}{2} \quad 6\frac{1}{4} + 2\frac{3}{8} \quad 5\frac{3}{8} + 3\frac{1}{2}$$

$$8\frac{1}{2} - 3\frac{1}{4} \quad 9\frac{3}{4} - 4\frac{1}{8} \quad 8\frac{3}{10} - 4\frac{1}{8} \quad 6\frac{1}{2} - 3\frac{1}{8}$$

## . LESSON LXII.

1. If one pint of peanuts costs 1 half of a dime, what will 5 pints cost?  $5 \text{ times } \frac{1}{2} = ?$

2. If one yard of cloth costs 2 fourths of a dollar, what will 3 yards cost?  $3 \text{ times } \frac{2}{4} = ?$

3. If it takes 2 eighths of a yard of lace for one veil, how much lace will it take for 3 veils?

4. How many sevenths are 2 times 2 sevenths?

5. How many ninths are 3 times 3 ninths?

6.  $3 \text{ times } \frac{2}{3} = ?$   $7 \text{ times } \frac{4}{7} = ?$   $4 \text{ times } \frac{3}{8} = ?$

7. If a man earns 2 dollars in one day, how much will he earn in 1 half-day?  $\frac{1}{2} \text{ of } 2 = ?$

8. If 1 yard of cloth costs 9 dollars, what will 1 third of a yard cost?  $\frac{1}{3} \text{ of } 9 = ?$

9. When coal is 7 dollars a ton, what will 1 seventh of a ton cost? What will 2 sevenths of a ton cost?

10. Mary is 15 years old, and her sister is 2 fifths as old. How old is her sister?  $15 \times \frac{2}{5} = ?$

11. 6 multiplied by  $\frac{1}{3} = ?$  By  $\frac{2}{3}$ ? By  $\frac{1}{6}$ ? By  $\frac{3}{6}$ ?

12. 10 multiplied by  $\frac{1}{5} = ?$  By  $\frac{2}{5}$ ? By  $\frac{3}{5}$ ? By  $\frac{7}{10}$ ?

13. A boy having 20 pennies gave  $\frac{1}{4}$  of them to one boy, and  $\frac{1}{5}$  of them to another. How many did he give to both? How many had he left?

14. If a pound of cinnamon costs 21 cents, what will  $\frac{1}{7}$  of a pound cost? What will  $\frac{3}{7}$  of a pound cost?

15. If a barrel of sugar is worth 25 dollars, what is  $\frac{1}{5}$  of it worth? What are  $\frac{3}{5}$  of it worth?

16. What is the product of  $\frac{5}{8}$  multiplied by 6? 6 multiplied by  $\frac{5}{8}$ ?

## SLATE EXERCISES.

Find the value of the following:

$$6 \text{ times } \frac{5}{7}, \text{ or } \frac{5}{7} \times 6. \quad \frac{3}{4} \times 5. \quad \frac{4}{9} \times 2.$$

$$5 \text{ times } \frac{3}{8}, \text{ or } \frac{3}{8} \times 5. \quad \frac{2}{4} \times 5. \quad \frac{7}{8} \times 5.$$

$$\frac{3}{8} \text{ of } 6, \text{ or } 6 \times \frac{3}{8}. \quad 8 \times \frac{2}{4}. \quad 6 \times \frac{3}{8}.$$

$$\frac{3}{4} \text{ of } 12, \text{ or } 12 \times \frac{3}{4}. \quad 9 \times \frac{2}{8}. \quad 12 \times \frac{5}{8}.$$



## LESSON LXIII.

1. At  $\frac{1}{2}$  of a dollar each, how many books can be bought for 1 dollar? How many times is  $\frac{1}{2}$  contained in 1?

2. At 2 fifths of a dollar per yard, how much cloth can be bought for 4 fifths of a dollar? How many times are  $\frac{2}{5}$  contained in  $\frac{4}{5}$ ?

3. If a boy can earn 2 eighths of a dollar per day, how long will it take him to earn 6 eighths of a dollar? How many times are  $\frac{2}{8}$  contained in  $\frac{6}{8}$ ?

4. If a man can mow  $\frac{2}{4}$  of an acre in one hour, how long will it take him to mow  $\frac{4}{4}$  of an acre? How many times are  $\frac{2}{4}$  contained in  $\frac{4}{4}$ ?

5. A boy having  $\frac{3}{8}$  of a pound of candy, divided it equally among his playmates, giving to each  $\frac{2}{8}$  of a pound. How many playmates had he?

6. A grocer having  $\frac{2}{10}$  of a barrel of vinegar, sold  $\frac{3}{10}$  of a barrel each day until it was all sold. In how many days did he sell it?

7. How many times are  $\frac{3}{10}$  contained in  $\frac{9}{10}$ , or what is the value of 9 tenths  $\div$  3 tenths?

8. How many times are  $\frac{4}{11}$  contained in  $\frac{8}{11}$ , or what is the value of  $\frac{8}{11} \div \frac{4}{11}$ ?

9. How long will it take a boy to earn  $\frac{9}{12}$  of a dollar, by earning  $\frac{3}{12}$  of a dollar per day? How many times are  $\frac{3}{12}$  contained in  $\frac{9}{12}$ ?  $\frac{9}{12} \div \frac{3}{12} = ?$

10. How many times are  $\frac{3}{7}$  contained in  $\frac{9}{7}$ ?  $\frac{5}{8}$  in  $\frac{10}{8}$ ?  $\frac{7}{15}$  in  $\frac{14}{15}$ ?  $\frac{3}{16}$  in  $\frac{12}{16}$ ?  $\frac{5}{17}$  in  $\frac{15}{17}$ ?

11. How long a time will be required to fill a cistern, if  $\frac{3}{12}$  of it is filled every hour? 1 or  $\frac{12}{12} \div \frac{3}{12} = ?$

### SLATE EXERCISES.

Find the value of the following:

$$\frac{12}{3} \div \frac{2}{3}$$

$$\frac{16}{4} \div \frac{2}{4}$$

$$\frac{18}{6} \div \frac{3}{6}$$

$$\frac{15}{8} \div \frac{3}{8}$$

$$\frac{25}{5} \div \frac{3}{5}$$

$$\frac{24}{8} \div \frac{3}{8}$$

$$\frac{21}{9} \div \frac{3}{9}$$

$$\frac{18}{8} \div \frac{2}{8}$$

$$2 \div \frac{1}{5}$$

$$4 \div \frac{1}{2}$$

$$8 \div \frac{2}{3}$$

$$7 \div \frac{1}{4}$$

### LESSON LXIV.

1. If William divides 4 oranges equally between his 2 sisters, how many will each receive?

2. What is one-half of 4 cents? What is one-half of 4?

3. By what number do you divide to find one-half of any number?

4. How many pears is 1 third of 3 pears?

5. How many pears are 2 thirds of 3 pears?

6. By what number do you divide to find one-third of any number? How do you find 2 thirds of a number?

7. How many roses are one-half of 8 roses?

8. If a woman divides 5 loaves of bread equally between 5 persons, what part will each person receive?

9. How many loaves are  $\frac{1}{5}$  of 5 loaves?  $\frac{2}{5}$  of 5 loaves?  $\frac{3}{5}$  of 5 loaves?

10. How is  $\frac{1}{5}$  of a number found?  $\frac{2}{5}$  of a number?

11. If 14 marbles are equally divided between 2 boys, how many marbles does each boy receive?

12. How many are  $\frac{1}{2}$  of 14? How many are  $\frac{1}{4}$  of 14?

13. One-fourth of 20 cents is how many cents?

14. By what number do you divide to find one-fourth of any number?

15. A man shot 12 pigeons and sold  $\frac{2}{3}$  of them. How many had he left?

16. A boy saw 18 fowls,  $\frac{5}{9}$  of which were white. How many were white?

17. A boy having 40 cents, paid  $\frac{1}{5}$  of his money for pencils and  $\frac{2}{10}$  of it for paper. How much did he have left?

18. A farmer sold 7 bushels of wheat for 28 dollars. What did he receive for one bushel?

19. How many bushels are  $\frac{1}{4}$  of 28 bushels?

20. How many bushels are  $\frac{2}{7}$  of 28 bushels?

21. What is  $\frac{1}{10}$  of 20? What is  $\frac{1}{8}$  of 56?

22. If 25 dollars is divided equally among 5 men, what part of the money will each receive? How much will each receive?



# NOTATION & NUMERATION

## LESSON LXV.

1. A single thing is called a *Unit*.
2. How many units make one ten? Two tens?
3. Copy and read:

10	12	27	35	42	59
16	64	73	86	90	99

4. Express in figures the following:

Ten.	Forty-eight.	Eighty-five.
Thirteen.	Sixty-four.	Ninety.
Twenty-five.	Seventy-nine.	Ninety-three.
Thirty-two.	Eighty-one.	Ninety-nine.

5. Express in figures the following:

One ten, no units.	One ten, one unit.
Five tens, six units.	Five tens, two units.
Six tens, four units.	Six tens, six units.
Two tens, seven units.	Two tens, one unit.
Seven tens, one unit.	Seven tens, three units.
Three tens, five units.	Three tens, four units.
Eight tens, six units.	Eight tens, one unit.
Four tens, five units.	Four tens, six units.
Nine tens, nine units.	Nine tens, one unit.



6. When two figures are written side by side what does the one at the right represent? What does the one at the left represent?

7. How many tens and units in ninety-nine?

8. If one is added to the 9 units, what is the result?

9. How many are 9 tens and 1 ten?

10. How many tens make one hundred?

11. Copy and read :

100	104	108	116	138	149
157	168	173	123	188	199
205	316	423	216	304	229

12. Express the following in figures :

One hundred, two tens, and five units.

Four hundreds, five tens, and no units.

Seven hundreds, five tens, and six units.

Eight hundreds, nine tens, and one unit.

Three hundreds, nine tens, and eight units.

Five hundreds, three tens, and seven units.

Two hundred.

Nine hundred.

Two hundred, forty.

Nine hundred, forty.

Eight hundred, five.

Six hundred, seventy.

Three hundred, fifty.

Five hundred, eighty.

Three hundred, forty.

Five hundred, twenty.

Five hundred, ninety.

Seven hundred, thirty.

13. When three figures are written side by side, what does the one at the right represent? The one next to it? The one at the left?

## 14. Copy and read :

314	268	572	681	372	465
200	260	350	580	673	856
371	426	842	730	307	406
184	755	862	985	422	999

## 15. Express in figures the following :

Two hundred, ten.

Five hundred, fifty.

Two hundred, forty.

Seven hundred, five.

Eight hundred, four.

Nine hundred, fifteen.

Five hundred, sixteen.

Eight hundred, twelve.

Five hundred, fifty-five.

Four hundred, sixty-six.

Nine hundred, forty-five.

Six hundred, forty-seven.

Eight hundred, fifty-four.

Seven hundred, forty-one.

Nine hundred, ninety-nine.

Eight hundred, sixty-three.

Three hundred, ninety-nine.

Seven hundred, twenty-nine.

The method of expressing numbers by figures is called the *Arabic notation*.

The method of reading numbers is called *Numeration*.

## LESSON LXVI.

1. If 1 be added to nine hundred ninety-nine, how many hundreds will there be?

2. To what are 10 hundreds equal? *One thousand.*

3. *One thousand* is expressed thus: **1,000.**

4. Copy and read the following:

1,000	1,004	1,016	1,323	1,548
2,000	2,159	3,872	5,625	7,822
8,465	6,372	4,189	9,786	9,999

5. Express in figures the following:

Seven thousand, two hundred, fifty-six.

Nine thousand, nine hundred, ninety-five.

Five thousand, three hundred, twenty-eight.

6. How many are 9 thousand and 1 thousand?

7. *Ten thousand* is expressed thus: **10,000.**

8. Copy and read the following:

10,000	18,000	22,005	35,012
87,482	96,856	13,729	88,543

9. Express in figures the following:

Ninety thousand, nine hundred, fifty-six.

Eighty-four thousand, five hundred, forty.

Seventy-five thousand, eight hundred, fifty.

Fifty-three thousand, two hundred, twenty.

Eighty thousand, seven hundred, forty-four.

Ninety thousand, nine hundred, ninety-nine.

10. How many are 90 thousand and 10 thousand?

11. *One hundred thousand* is expressed thus:  
**100,000.**



### LESSON LXVII.

1. Copy and read the following:

100,000	120,000	562,000	159,725
540,805	723,016	986,784	684,379

2. What do the three figures at the right represent? *Units, tens, and hundreds.*

3. What do the three figures at the left represent? *Units, tens, and hundreds of thousands.*

4. A group of figures containing the units, tens, and hundreds of any denomination is called a *Period*.

5. How many periods are there in the number 132,654?

6. What is the denomination of the first period?

7. What is the denomination of the second period?

8. Copy and read the following:

354,728	639,955	845,762
876,953	423,872	635,476
82,675	400,800	8,005
264,361	315,008	216,040

9. How many figures must there be in a period?

10. How are the periods separated from each other?

Express in figures the following:

11. Two hundred-eight thousand, five hundred seventy-four.

12. Seven hundred fifty-four thousand, two hundred twenty-five.

13. Eight hundred sixty-three thousand, four hundred eighty-nine.

14. Eight hundred sixty-five thousand, three hundred thirty-seven.

15. Eighty-four thousand, five hundred eighty-four.

16. Nine hundred thirty-three thousand, six hundred twelve.

17. Three hundred thousand, six hundred.

18. Eight hundred ninety-four thousand, six hundred twenty-four.

19. Five hundred eighty thousand, seven hundred ninety-seven.

20. Three hundred eighty-nine thousand, seven hundred eighty-one.

21. Seven hundred eighteen thousand, nine hundred eighty-seven.

22. Six hundred thousand, one.

23. Six hundred twenty-four thousand, three hundred twenty-nine.

24. Eight hundred thirty-nine thousand, five hundred sixteen.

25. Nine hundred, thirty-five thousand, eight hundred twenty-six.

26. Nine hundred sixty-eight thousand, nine hundred thirty-seven.



## LESSON LXVIII.

1. Helen solved 6 examples, Martha solved 5, and Jennie solved 9. How many examples did they all solve?

2. How many goblets are 3 goblets, 8 goblets, and 9 goblets?

3. James learned 5 lessons on Monday, 6 lessons on Tuesday, and 3 lessons on Wednesday. How many lessons did he learn in the three days?

4. How many marbles are 5 marbles, 4 marbles, 6 marbles, and 2 marbles?

5. After spending 2 cents for a slate-pencil and 5 cents for a lead-pencil, James had 5 cents left. How much had he at first?

6. How many dollars are 10 dollars and 8 dollars?

## DEFINITIONS.

The process of finding one number that is equal to two or more numbers is called *Addition*.

The result in addition is called the *Sum*.

The *Sign of Addition* is an upright cross: +, called *plus*.

The *Sign of Equality* is two short horizontal lines: =.

1. What is the sum of 5, 4, 7, and 6?

PROCESS.	EXPLANATION.—
5	For convenience the numbers to be added are arranged so that they stand in a column.
4	We begin at the bottom to add, thus: 6, 13,
7	17, 22, and write the sum beneath.
6	Hence, the sum is 22.
<u>22</u>	In adding say 6, 13, 17, 22, instead of 6 and 7 are 13 and 4 are 17 and 5 are 22.

### SLATE EXERCISES.

Copy and add the following:

(2.)	(3.)	(4.)	(5.)	(6.)
4	5	6	8	3
2	6	5	2	2
3	3	3	3	5
5	4	2	3	1
<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>

7. William shot 6 squirrels, Henry shot 8, John shot 5, and James shot 7. How many squirrels did they shoot?

8. Oscar owned 4 cows, Herbert owned 5, George owned 3, and Clarence owned 6. How many cows did the four boys own?

9. A merchant received 5 boxes of oranges one day, 6 the next, and 4 the next. How many boxes of oranges did he receive?

10. A farmer sold 6 cords of wood to one man, 3 cords to another, 8 to another, and 2 to another. How many cords of wood did he sell?

## SLATE EXERCISES.

Copy and add the following :

(11.)	(12.)	(13.)	(14.)	(15.)
4	6	3	4	6
7	5	6	7	2
8	7	9	2	3
2	8	2	3	9
3	5	6	5	3
<u>4</u>	<u>1</u>	<u>2</u>	<u>4</u>	<u>2</u>



## LESSON LXIX.

1. What is the sum of 217, 853, and 365 ?

PROCESS.

$$\begin{array}{r}
 217 \\
 853 \\
 365 \\
 \hline
 1435
 \end{array}$$

EXPLANATION.—For convenience the numbers to be added are arranged so that units stand under units, and tens under tens, etc.

Beginning at the right hand, each column is added separately.

Thus,  $5 + 3 + 7 = 15$ , the sum of the units. 15 units are equal to 1 ten and 5 units. The 5

is written under the column of units, and the 1 is reserved to add with the tens.

1 reserved  $+ 6 + 5 + 1 = 13$ , the sum of the tens. 13 tens are equal to 1 hundred and 3 tens. The 3 is written under the column of tens, and the 1 is reserved to add to the column of hundreds.

1 reserved  $+ 3 + 8 + 2 = 14$ , the sum of the hundreds. 14 hundreds are equal to 1 thousand and 4 hundreds, which are written in thousands' and hundreds' places in the sum.

In adding, name results only. Thus, instead of saying, 5 and 3 are 8 and 7 are 15, say 5, 8, 15.



## SLATE EXERCISES.

Copy and add the following:

(2.)	(3.)	(4.)	(5.)
678	852	338	852
153	365	466	738
<u>261</u>	<u>472</u>	<u>753</u>	<u>645</u>

(6.)	(7.)	(8.)	(9.)
235	512	832	893
415	416	142	416
268	304	624	842
<u>317</u>	<u>497</u>	<u>615</u>	<u>249</u>

10. A man traveled 250 miles by railroad, 325 by steamboat, and 190 by stage. How many miles did he travel?

11. What is the sum of three thousand five hundred twenty-six, eight thousand one hundred twelve, six thousand nine hundred eighteen?

12. A butter-buyer bought 326 pounds of butter from one dairy, 518 pounds from another, and 168 pounds from another. How many pounds of butter did he buy?

13. Find the sum of six hundred seventy-nine, three hundred twenty-eight, and fourteen.

14. Three persons deposited money in a bank. The first put in 192 dollars, the second 466 dollars, and the third 825 dollars. How much money did they deposit?

15. A man paid 400 dollars for a span of horses, 150 dollars for a carriage, and 75 dollars for a harness. How much money did he pay for all?

Copy and add:

(16.)	(17.)	(18.)
6,231	27,638	25,789
1,354	13,925	32,644
4,872	53,164	58,793
3,125	41,538	62,461
3,258	31,604	58,261
<u>4,123</u>	<u>58,643</u>	<u>21,469</u>

(19.)	(20.)	(21.)
6,843	13,462	46,845
2,754	26,541	27,891
6,281	32,716	84,263
4,156	42,683	38,419
7,123	94,275	32,981
<u>8,142</u>	<u>24,239</u>	<u>19,497</u>

(22.)	(23.)	(24.)
4,265	68,465	48,634
3,789	31,892	31,299
4,573	47,468	87,109
4,684	39,210	46,296
4,591	40,009	37,415
8,743	32,567	45,984
4,268	26,849	51,846
<u>5,745</u>	<u>45,265</u>	<u>74,695</u>

A decorative banner with ornate scrollwork at the ends and top. The word "SUBTRACTION" is written in a bold, serif, all-caps font across the center of the banner.

# SUBTRACTION

## LESSON LXX.

1. Herbert earned 19 dollars and gave 7 dollars for a coat. How much had he left?

2. Mary painted 18 pictures and sold 6 of them. How many had she left?

3. If a man earns 15 dollars a week and uses 8 dollars, how many dollars will he have left?

4. A grocer having 22 pounds of lard, sold 11 pounds of it. How many pounds had he left?

5. William had 12 marbles, but gave away 5 of them. How many had he left?

6. 25 pencils are how many more than 10 pencils?

7. From a piece of cloth containing 22 yards, 16 yards were cut. How many yards remained?

8. From a cistern containing 40 gallons of water, 10 gallons were drawn out. How many gallons remained?

9. There are 24 pupils in a school, of whom 13 are boys. How many are girls?

10. One piece of cloth contained 26 yards, and another contained 13 yards. How many yards more were there in the larger piece?

11. A farmer who had 23 horses, sold 11 of them. How many horses had he left?

## DEFINITIONS.

The process of finding the difference between two numbers is called *Subtraction*.

The greater of the two numbers is called the *Minuend*.

The lesser of the two numbers is called the *Subtrahend*.

The result obtained by subtracting is called the *Remainder* or *Difference*.

The *Sign of Subtraction* is a short horizontal line: —, called *minus*.

1. From 768 subtract 425.

PROCESS.

7 6 8

4 2 5

3 4 3

EXPLANATION.—For convenience the less number is written under the greater, units under units, tens under tens, etc.

Beginning at the right hand, each figure of the subtrahend is subtracted from the corresponding figure of the minuend.

8 units minus 5 units equal 3 units, which are written under the units.

6 tens minus 2 tens equal 4 tens, which are written under the tens.

7 hundreds minus 4 hundreds equal 3 hundreds, which are written under the hundreds. Hence the remainder is 343.

## SLATE EXERCISES.

Copy and subtract the following:

(2.)	(3.)	(4.)	(5.)	(6.)
635	876	957	543	665
421	453	835	320	543

## LESSON LXXI.

## 1. From 7425 subtract 2536?

	PROCESS.	EXPLANATION.— For convenience the less number is written under the greater, units under units, tens under tens, hundreds under hundreds, etc.
Minuend	7 4 2 5	
Subtrahend	<u>2 5 3 6</u>	
Remainder	4 8 8 9	Beginning at the right hand, each figure of the subtrahend is subtracted from the corresponding figure of the minuend.

Since 6 units can not be subtracted from 5 units, 1 ten is united with the 5 units. 1 ten is equal to 10 units. 10 units and 5 units are 15 units. 6 units from 15 units leave 9 units. The 9 is written in units' place.

Since 1 of the tens was united with the units, there is but 1 ten left. Because 3 tens can not be subtracted from 1 ten, 1 hundred is united with the 1 ten. 1 hundred is equal to 10 tens. 10 tens and 1 ten are 11 tens. 3 tens from 11 tens leave 8 tens. The 8 is written in tens' place.

Because 5 hundreds can not be subtracted from 3 hundreds, 1 thousand is united with the 3 hundreds. 1 thousand equals 10 hundreds. 10 hundreds and 3 hundreds equal 13 hundreds. 5 hundreds from 13 hundreds leave 8 hundreds. The 8 is expressed in hundreds' place.

Since 1 thousand was added with the hundreds, there are but 6 thousands left. 2 thousands from 6 thousands leave 4 thousands. The 4 is written in thousand's place in the remainder.

Hence the remainder is 4889.

## SLATE EXERCISES.

Copy and subtract the following:

(2.)	(3.)	(4.)	(5.)	(6.)
6825	8541	3412	1694	3728
<u>4376</u>	<u>7285</u>	<u>1589</u>	<u>469</u>	<u>1963</u>

Copy and subtract the following:

(7.)	(8.)	(9.)	(10.)	(11.)
4328	6351	4211	6253	4101
<u>2579</u>	<u>5472</u>	<u>3587</u>	<u>4897</u>	<u>2853</u>

12. A paid 8,728 dollars for his farm, and B paid 5,935 dollars for his. How much more did A's farm cost than B's?

13. There were manufactured in a cotton factory 1,857 yards on Monday, and 2,139 yards on Tuesday. How many yards more were manufactured on Tuesday than on Monday?

14. A man who owned 8,754 acres of land, sold 3,215 acres to one company, and 2,154 acres to another. How many acres were unsold?

15. From eight thousand, five hundred sixteen, subtract three thousand, six hundred twenty-four.

16. A mill was purchased for 13,850 dollars, and afterward sold at a loss of 2,175 dollars. How much was received for it?

Copy and subtract the following:

(17.)	(18.)	(19.)	(20.)	(21.)
15,862	14,684	28,465	35,469	99,846
<u>9,839</u>	<u>13,299</u>	<u>13,984</u>	<u>24,983</u>	<u>31,985</u>
(22.)	(23.)	(24.)	(25.)	(26.)
85,724	27,869	35,321	73,814	125,269
<u>46,689</u>	<u>13,780</u>	<u>15,094</u>	<u>15,209</u>	<u>48,736</u>



# MULTIPLICATION

## LESSON LXXII.

1. What will 9 sheep cost at 6 dollars a head?
2. What will 10 quarts of milk cost at 6 cents a quart?
3. What will be the cost of 4 wagons at 30 dollars apiece?
4. Since 12 inches make one foot, how many inches are there in 3 feet?
5. At 11 cents a quart, what will 9 quarts of berries cost?
6. If a laborer can work but 13 days per month, how many days can he work in 3 months?
7. In one week there are 7 days. How many days are there in 12 weeks?
8. If one hogshead of sugar is worth 40 dollars, what are 2 hogsheads of sugar worth?
9. If one apple-tree yields 14 bushels of apples, how many bushels will 2 such trees yield?
10. If a man plants 20 apple-trees in one row, how many trees will he plant in 5 such rows?
11. When loaf-sugar is worth 15 cents a pound, how much will 4 pounds cost?
12. What will 9 dozen of peaches cost at 10 cents per dozen?

13. What will be the cost of 3 copy-books at 20 cents each?

14. What will be the cost of 4 yards of muslin at 30 cents a yard?

15. If you give 25 cents to each of 3 beggars, how much will you give them?

### DEFINITIONS.

The process of taking one number as many times as there are units in another, is called *Multiplication*.

The number to be taken or multiplied is called the *Multiplicand*.

The number which shows how many times the multiplicand is taken is called the *Multiplier*.

The result obtained by multiplying is called the *Product*.

The *Sign of Multiplication* is an oblique cross:  $\times$ . It is read *times* or *multiplied by*.

1. Multiply 421 by 3.

	PROCESS.
Multiplicand	421
Multiplier	3
Product	<hr/> 1263

EXPLANATION.—For convenience the multiplier is written under the multiplicand. Beginning at the right hand each figure of the multiplicand is multiplied by the multiplier.

Thus 3 times 1 unit are 3 units. The 3 is written in units' place in the product. 3 times 2 tens are 6 tens. The 6 is written in tens' place in the product.

3 times 4 hundreds are 12 hundreds, which equal 1 thousand and 2 hundreds. The 1 thousand is written in thousands' place and the 2 hundreds in hundreds' place in the product.

Hence the product is 1263.



## SLATE EXERCISES.

Copy and multiply the following :

(2.)	(3.)	(4.)	(5.)
6102	5233	5212	7342
<u>4</u>	<u>3</u>	<u>3</u>	<u>2</u>

(6.)	(7.)	(8.)	(9.)
3413	5234	3123	4123
<u>2</u>	<u>2</u>	<u>3</u>	<u>3</u>



## LESSON LXXIII.

1. How many are 8 times 196 ?

PROCESS.

$$\begin{array}{r} 196 \\ \times 8 \\ \hline 1568 \end{array}$$

EXPLANATION.—For convenience the multiplier is written under the multiplicand. Beginning at the right each figure of the multiplicand is multiplied by the multiplier.

Thus, 8 times 6 units are 48 units. 48 units are equal to 4 tens and 8 units. The 8 is written in units' place in the product, and the 4 is reserved to add with the tens. 8 times 9 tens are 72 tens, plus the 4 tens reserved, are 76 tens. 76 tens are equal to 7 hundreds and 6 tens. The 6 is written in tens' place in the product, and the 7 is reserved to add with the hundreds.

8 times 1 hundred are 8 hundreds, plus 7 hundreds reserved, are 15 hundreds. 15 hundreds are equal to 1 thousand and 5 hundreds, which are written in hundreds' and thousands' places in the product.

Hence the product is 1568.

The accuracy of the work may be tested by reviewing it.

Copy and multiply :

(2.)	(3.)	(4.)	(5.)
1345	3824	6325	7863
<u>6</u>	<u>7</u>	<u>4</u>	<u>5</u>
(6.)	(7.)	(8.)	(9.)
7581	6274	6235	7341
<u>3</u>	<u>9</u>	<u>8</u>	<u>2</u>

10. If a ship sails 368 miles in one week, how many miles will she sail in 7 weeks?

11. There are 5280 feet in a mile. How many feet are there in 9 miles?

12. What will 6 yoke of cattle cost at 184 dollars a yoke?

13. If 1 horse is valued at 275 dollars, what is the value of 6 such horses?

14. If a ship sails 895 miles in 1 week, how far will she sail in 9 weeks?

15. What is the product of 457 multiplied by 7?

16. What is the product of 784 multiplied by 4?

17. If a clerk receives a salary of 972 dollars a year, how much will he receive in 5 years?

18. Since there are 365 days in 1 year, how many days are there in 9 years?

19. Multiply 3452 by 3. Multiply 1472 by 5.

20. Multiply 6841 by 6. Multiply 5261 by 7.

21. Multiply 7186 by 3. Multiply 9167 by 8.

22. Multiply 2041 by 8. Multiply 9380 by 9.

23. Multiply 4926 by 6. Multiply 4829 by 7.

24. Multiply 3624 by 4. Multiply 1684 by 2.

25. If it takes 5428 shingles for the roof of a house, how many shingles will it take for 5 such houses?

Copy and multiply:

(26.)	(27.)	(28.)	(29.)	(30.)
4753	6529	8881	9573	2469
<u>5</u>	<u>3</u>	<u>6</u>	<u>4</u>	<u>8</u>

(31.)	(32.)	(33.)	(34.)	(35.)
6382	4629	3265	8475	8463
<u>6</u>	<u>7</u>	<u>9</u>	<u>8</u>	<u>4</u>



## LESSON LXXIV.

1. Multiply 425 by 37.

FIRST PROCESS.

$$\begin{array}{r}
 425 \\
 \cdot \\
 37 \\
 \hline
 7 \times 425 = 2975 \\
 30 \times 425 = 12750 \\
 37 \times 425 = 15725
 \end{array}$$

EXPLANATION.—The numbers are written as before. Since in multiplying we multiply by the parts of a number, to multiply by 37 we multiply by 30 and by 7, and add the results.

7 times 425 are 2975, the first partial product; 30 or 3 tens times 425 are 1275 tens or 12750, the second partial product. The sum of these partial products will be the entire product.

Hence the entire product is 15725.

## SECOND PROCESS.

$$\begin{array}{r}
 425 \\
 37 \\
 \hline
 7 \times 425 = 2975 \\
 3 \times 425 = 1275 \\
 \hline
 15725
 \end{array}$$

EXPLANATION.—In this process the cipher at the right of the partial product is omitted and the significant figures placed in their proper places. Thus, in multiplying by 3 *tens*, the product is 1275 *tens* or 12 thousands 7 hundreds and 5 tens, which are written in their proper places in the partial product.

In multiplying by *tens* the lowest denomination of the product is *tens*, in multiplying by *hundreds* it is *hundreds*, by *thousands* it is *thousands*. Hence,

*The first figure of each product should be placed under the figure by which we multiply.*

## SLATE EXERCISES.

	(2.)	(3.)	(4.)	(5.)	(6.)
Multiply	3468	4126	7824	6846	7125
By	<u>12</u>	<u>31</u>	<u>23</u>	<u>43</u>	<u>37</u>

	(7.)	(8.)	(9.)	(10.)	(11.)
Multiply	4685	7235	4986	5843	1987
By	<u>76</u>	<u>83</u>	<u>49</u>	<u>121</u>	<u>316</u>

	(12.)	(13.)	(14.)	(15.)	(16.)
Multiply	5964	6842	2723	8962	8462
By	<u>73</u>	<u>39</u>	<u>64</u>	<u>135</u>	<u>216</u>

	(17.)	(18.)	(19.)	(20.)	(21.)
Multiply	8964	3562	7825	3265	9268
By	<u>62</u>	<u>36</u>	<u>47</u>	<u>234</u>	<u>327</u>



## LESSON LXXV.

1. How many barrels of flour at 8 dollars a barrel, can be bought for 72 dollars?

2. If there are 3 feet in a yard, how many yards are there in 27 feet?

3. At 4 dollars a cord, how many cords of wood can be bought for 40 dollars?

4. If a man can walk 4 miles per hour, how long will it take him to walk 36 miles?

5. If 5 paces are a rod of distance, what is the length in rods of a piece of land which is 30 paces long?

6. If paper is put in packages containing 6 sheets each, how many packages can be made out of 48 sheets?

7. If 5 bushels of wheat make a barrel of flour, how many barrels of flour can be made from 40 bushels of wheat?

8. At 6 dollars a ton, how many tons of hay can be bought for 54 dollars?

9. If a man can build 7 rods of fence in one day, in how many days can he build 35 rods?

10. If a teacher earns 9 dollars a week, in how many weeks can she earn 90 dollars?

## DEFINITIONS.

The process of finding how many times one number is contained in another is called *Division*.

The number to be divided is called the *Dividend*.

The number by which the dividend is to be divided is called the *Divisor*.

The result in division is called the *Quotient*.

The part of the dividend remaining when the division is not exact is called the *Remainder*.

The *Sign of Division* is  $\div$ , read *divided by*.

Thus,  $24 \div 6$  is read, 24 divided by 6.

## 1. How many times is 3 contained in 369?

## FIRST PROCESS.

Divisor. Dividend. Quotient.

$$\begin{array}{r}
 3 \overline{) 369} \begin{array}{l} 100 \\ 20 \\ 3 \end{array} \\
 \underline{300} \phantom{00} \\
 69 \phantom{00} \\
 \underline{60} \phantom{00} \\
 9 \phantom{00} \\
 \underline{9} \phantom{00} \\
 0
 \end{array}$$

## EXPLANATION.—For convenience

the divisor is written at the left of the dividend, and the quotient at the right. Beginning at the left we divide.

3 is contained in 369 1 hundred times and a remainder. The 100 is placed in the quotient, and the divisor is multiplied by it. The product 300 is written under the dividend. Subtracting there is a remainder of 69.

3 is contained in 69, 20 times and a remainder. The 20 is placed in the quotient and the divisor multiplied by it. The product 60 is written under the partial dividend. Subtracting the remainder is 9.

3 is contained in 9, 3 times and no remainder. The 3 is placed in the quotient, and the divisor multiplied by it. The product 9 is written under the partial dividend. Subtracting, there is no remainder.

The true quotient is therefore the sum of the partial quotients, which is 123, and 3 is contained in 369, 123 times.

## SECOND PROCESS.

		hund.	tens.	units.
3) 369(	1	2	3	
3				
6				
6				
9				
9				

**EXPLANATION.**—The second process is the same as the first, except that the ciphers are omitted from the right of the quotient figures and partial products, the value of figures being indicated by their position. Thus, the figures of the quotient are 1 hundred, 2 tens, and 3 units, which are written in succession so that each figure represents its proper value.

The products 3 hundreds, 6 tens and 9 units are placed under hundreds, tens, and units in the partial dividends.

## SLATE EXERCISES.

Copy and divide the following:

(2.)	(3.)	(4.)	(5.)
4) 488 (	5) 550 (	3) 699 (	2) 264 (



## LESSON LXXVI.

1. How many times is 6 contained in 1398?

## PROCESS.

6) 1398(	2	3	3
12			
19			
18			
18			
18			

**EXPLANATION.**—For convenience the divisor is written at the left of the dividend and the quotient at the right. Beginning at the left of the dividend we divide.

6 is not contained in 1 thousand any thousand times, therefore the quotient can not be higher than hundreds. Hence we must find how many times 6 is contained in all the hundreds of the dividend.

1 thousand is equal to 10 hundreds. 10 hundreds plus 3 hundreds equal 13 hundreds. 6 is contained in

13 hundreds 2 hundred times and a remainder. The 2 is written in hundreds' place in the quotient and the divisor multiplied by it. Subtracting this product from the partial dividend, 13 hundreds, there is a remainder of 1 hundred.

1 hundred remainder is equal to 10 tens. 10 tens plus 9 tens equal 19 tens. 6 is contained in 19 tens 3 tens times and a remainder. The 3 is written in tens' place in the quotient, and the divisor multiplied by it. Subtracting this product from the partial dividend, 19 tens, there is a remainder of 1 ten in the quotient.

The 1 ten remainder equals 10 units. 10 units plus 8 units equal 18 units. 6 is contained in 18 units 3 times and no remainder. The 3 is written in units' place in the quotient, and the divisor multiplied by it.

Hence the quotient is 233.

### SLATE EXERCISES.

Copy and divide the following:

(2.)	(3.)	(4.)	(5.)
5)32860(	8)72880(	6)63546(	3)56841(

(6.)	(7.)	(8.)	(9.)
4)87564(	7)67326(	9)27819(	7)58562(

(10.)	(11.)	(12.)	(13.)
6)38412(	5)42865(	8)32848(	4)48264(

(14.)	(15.)	(16.)	(17.)
7)54285(	9)32616(	8)42856(	9)49842(

The solution of examples having a small divisor, may be shortened by performing the multiplications and subtractions without writing the results. This process is called *Short Division*.



The solution of Example 1, by short division, is:

PROCESS.

$$\begin{array}{r} 6 \overline{) 1398} \\ 233 \end{array}$$

EXPLANATION.—6 is contained in 13 hundreds 2 hundred times and 1 hundred remainder. The 2 is written in the quotient under units of the same order in the dividend.

1 hundred remainder and 9 tens make 19 tens. 6 is contained in 19 tens 3 tens times and 1 ten remainder. The 3 is written in the quotient under tens in the dividend.

1 ten remainder and 8 units make 18 units. 6 is contained in 18 units 3 times. The 3 is written in the quotient under units.

Hence the quotient is 233.

Solve by short division:

18.  $4761 \div 3$ .

19.  $5848 \div 4$ .

20.  $3725 \div 5$ .

21.  $4865 \div 7$ .

22.  $2844 \div 6$ .

23.  $7254 \div 9$ .

24.  $9328 \div 8$ .

25.  $6832 \div 7$ .

26.  $9745 \div 5$ .

27.  $6835 \div 5$ .

28.  $7281 \div 9$ .

29.  $3234 \div 6$ .

30.  $5948 \div 4$ .

31.  $4275 \div 3$ .

32.  $3577 \div 7$ .

33.  $3486 \div 6$ .

34.  $9648 \div 8$ .

35.  $8936 \div 9$ .

36.  $8532 \div 6$ .

37.  $6435 \div 5$ .

38.  $3280 \div 8$ .

39.  $3689 \div 7$ .

40.  $8262 \div 9$ .

41.  $5984 \div 4$ .

42.  $6975 \div 5$ .

43.  $4284 \div 7$ .

44.  $6720 \div 8$ .

45.  $9873 \div 9$ .

46.  $3248 \div 8$ .

47.  $5274 \div 6$ .

48.  $8245 \div 5$ .

49.  $3824 \div 4$ .

50.  $4920 \div 8$ .

51.  $3915 \div 9$ .

52.  $4823 \div 7$ .

53.  $4625 \div 5$ .

54.  $9441 \div 3$ .

55.  $8928 \div 6$ .

## LESSON LXXVII.

## 1. Divide 4825 by 26.

PROCESS.

Divisor. Dividend. Quotient.

$$\begin{array}{r}
 26 \overline{) 4825} \quad (185 \\
 \underline{26} \phantom{00} \\
 222 \phantom{0} \\
 \underline{208} \phantom{0} \\
 145 \phantom{0} \\
 \underline{130} \phantom{0} \\
 \text{Remainder } 15
 \end{array}$$

EXPLANATION.—26 is not contained in 4 thousands any thousands times, hence, the thousands are united with the hundreds, making 48 hundreds. 26 is contained in 48 hundreds 1 hundred times and a remainder. The 1 is written in hundreds' place in the quotient and the divisor multiplied by it, giving a product of 26 hundreds. Subtracting this product from the partial dividend 48, there is a remainder of 22 hundreds.

22 hundreds united with 2 tens make 222 tens. 26 is contained in 222 tens 8 tens times and a remainder. The 8 is written in tens' place in the quotient and the divisor multiplied by it, giving a product of 208 tens. Subtracting this product from the partial dividend there is a remainder of 14 tens.

14 tens united with 5 units make 145 units. 26 is contained in 145 units 5 times and a remainder. The 5 is written in units' place in the quotient and the divisor multiplied by it, giving a product of 130 units. Subtracting, there is a remainder of 15.

Therefore the quotient is 185, and the remainder, 15.

Divide:

2. 864 by 12.
3. 845 by 13.
4. 906 by 21.
5. 1188 by 22.
6. 2016 by 32.
7. 1486 by 33.
8. 2016 by 30.
9. 2397 by 51.

Divide:

10. 3358 by 73.
11. 4788 by 84.
12. 3696 by 66.
13. 1904 by 28.
14. 3277 by 29.
15. 5706 by 46.
16. 45658 by 37.
17. 55484 by 26.



## LESSON LXXVIII.

## UNITED STATES MONEY.

The money of the United States is called *United States Money*.

The standard unit is the *dollar*.

## TABLE.

10 Mills	are equal to	1 Cent.
10 Cents	" " "	1 Dime.
10 Dimes	" " "	1 Dollar.

The denomination dimes is not generally used.

The *Sign of Dollars* is \$, a supposed combination of U. S.

1. How many mills are there in 2 cents? In 5 cents? In 10 cents?

2. How many cents are there in 2 dimes? In 4 dimes? In 7 dimes? In 10 dimes or 1 dollar? In 5 dimes or one-half of a dollar?

3. How many cents are there in \$2? In \$3? In \$4? In \$5?

4. How many dollars are there in 200 cents? In 300 cents? In 400 cents? In 500 cents?

5. In 450 cents how many dollars are there, and how many cents besides? In 375 cents? In 425 cents? In 870 cents? In 684 cents? In 296 cents?

1. In expressing dollars and cents by figures, a period called the *decimal point*, is placed between the dollars and the cents. Thus, 265 cents are equal to \$2.65, which is read, 2 dollars, 65 cents.

2. When less than 10 cents are written, a cipher must be written before the number. Thus, 5 cents are written, \$.05.

3. Mills are written after the cents. Thus, \$2.655 is read, 2 dollars, 65 cents, 5 mills.

6. Read the following:

\$3.25; \$6.38; \$7.24; \$6.05; \$2.46; \$7.24;  
\$5.18; \$7.36; \$3.02; \$5.07; \$2.15; \$4.16.

7. Write the following:

Five dollars twenty-nine cents.

Seven dollars sixty-eight cents.

Eight dollars seventy-seven cents.

Forty-eight dollars sixteen cents.

Thirty-four dollars nine cents.

Sixty-eight dollars nineteen cents.

## LESSON LXXIX.

### SLATE EXERCISES.

Copy and add the following:

(1.)	(2.)	(3.)	(4.)	(5.)
\$63.28	\$32.18	\$24.16	\$38.24	\$29.66
47.15	25.16	37.18	29.16	18.39
<u>21.15</u>	<u>17.24</u>	<u>22.39</u>	<u>45.77</u>	<u>14.27</u>

Copy and subtract the following:

(6.)	(7.)	(8.)	(9.)	(10.)
\$69.84	\$63.18	\$36.27	\$17.64	\$33.64
<u>21.39</u>	<u>24.24</u>	<u>28.39</u>	<u>8.89</u>	<u>17.25</u>

(11.)	(12.)	(13.)	(14.)	(15.)
\$16.00	\$45.10	\$46.00	\$28.76	\$64.35
<u>13.28</u>	<u>33.49</u>	<u>25.18</u>	<u>18.87</u>	<u>57.47</u>

Arrange in columns and add:

16. \$12.27, \$15.34, \$18.29, \$64.38, \$15.92, \$2.68.
17. \$8.37, \$28.05, \$36, \$14.29, \$25, \$1.25.
18. \$5.06, \$2.18, \$.34, \$.08, \$5.22, \$18.
19. \$3.25, \$4.26, \$8.35, \$13, \$15.92, \$14.96.
20. \$8.29, \$4.34, \$5.69, \$8.34, \$7.29, \$6.84.
21. \$14.24, \$8, \$3.46, \$.75, \$2.84, \$7.50.

How many are

22. 3 times \$18.24?
23. 7 times \$21.36?
24. 12 times \$34.29?
25. 15 times \$34.09?
26. 5 times \$19.26?
27. 8 times \$34.18?

How many are

28. 18 times \$16.24?
29. 30 times \$45.61?
30. 24 times \$8.64?
31. 35 times \$16.80?
32. 32 times \$18.25?
33. 25 times \$15.24?

What is

34.  $\frac{1}{5}$  of \$24.35?
35.  $\frac{1}{3}$  of \$13.30?
36.  $\frac{1}{4}$  of \$24.36?
37.  $\frac{1}{8}$  of \$32.48?

What is

38.  $\frac{1}{9}$  of \$38.43?
39.  $\frac{1}{12}$  of \$34.24?
40.  $\frac{1}{18}$  of \$9.40?
41.  $\frac{1}{11}$  of \$74.25?

## LESSON LXXX.

## MEASURES OF LENGTH.

The measures used in determining length, or the distance of one place from another, are called *Measures of Length*.

## TABLE.

12 Inches	are equal to	1 Foot.
3 Feet	" " "	1 Yard.
5½ Yards	} " " "	1 Rod.
16½ Feet		
320 Rods	" " "	1 Mile.

1. How many inches are there in 2 feet? In 3 feet? In 5 feet? In  $\frac{1}{2}$  of a foot? In  $\frac{1}{4}$  of a foot?


2. How many feet are there in 24 inches? In 36 inches? In 48 inches? In 60 inches? In 72 inches?

3. How many feet are there in 3 yards? In 4 yards? In 8 yards? In 9 yards?

4. How many inches are there in 1 yard? In 2 yards? In 4 yards?

5. How many feet are there in 2 rods? In 2 rods and 5 feet? In 2 rods and 10 feet? In 2 rods and 2 yards?

6. How many rods are there in 2 miles? In 3 miles? In 5 miles?

7. This line is 1 inch long . Cut a string a foot in length. A yard in length. A rod in length.

8. Name two places a mile apart. Two miles.



## LESSON LXXXI.

## LIQUID MEASURES.

The measures used in measuring all kinds of liquids are called *Liquid Measures*.

## TABLE.

4	Gills	are equal to	1	Pint.
2	Pints	"	"	" 1 Quart.
4	Quarts	"	"	" 1 Gallon.

In estimating the capacity of cisterns, reservoirs, etc.,  $31\frac{1}{2}$  gallons are considered a barrel, and 63 gallons a hogshead.

1. Name some articles that are bought and sold by the gallon, quart, pint, or gill.

2. How many gills are there in 2 pints? In 3 pints? In 5 pints? In 10 pints? In 12 pints?

3. How many pints are there in 5 quarts? In 7 quarts? 6 quarts? 8 quarts?

4. How many quarts are there in 5 gallons? In 8 gallons? 7 gallons? 6 gallons?

5. How many pints are there in 12 gills? In 16 gills? In 15 gills? In 21 gills? In 32 gills?

6. How many gallons are there in 12 quarts? In 16 quarts? In 15 quarts? In 25 quarts?



## LESSON LXXXII.

## DRY MEASURES.

The measures used in measuring grain, roots, fruit, etc., are called *Dry Measures*.

## TABLE.

2 Pints	are equal to	1 Quart.
8 Quarts	" " "	1 Peck.
4 Pecks	" " "	1 Bushel.

In measuring coarse commodities the measure should be *heaped*.  
In measuring grain, seeds, etc., the measure should be *even full*.

1. Name some articles that are bought and sold by the bushel, peck, or quart?

2. How many pints are there in 4 quarts? In 8 quarts? In 2 pecks? In 3 pecks? In 4 pecks?

3. How many pecks are there in 2 bushels? In 5 bushels? In 8 bushels? In 10 bushels?

4. How many quarts are there in 40 pints? In 60 pints?

5. How many bushels are there in 32 pecks? In 40 pecks?

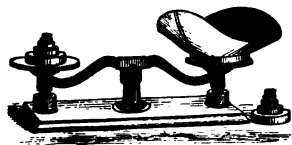
6. What will 2 pecks of berries cost at 3 cents a pint?



## LESSON LXXXIII.

## MEASURES OF WEIGHT.

The weights used in measuring all coarse and heavy articles, as hay, grain, groceries, coal, flour, etc., and all the metals except gold and silver, and all drugs except medicines compounded in prescriptions, are called *Avoirdupois Weights*.



## TABLE.

16 Ounces	are equal to	1 Pound.
100 Pounds	" " "	1 Hundred-weight.
20 Hundred-weight	"	1 Ton.

1. How many ounces are there in 3 pounds? In 5 pounds?
2. How many pounds are there in 7 hundred-weight? In 9 hundred-weight?
3. How many pounds are there in 1 ton? In 2 tons? In 5 tons?
4. How many tons are there in 6000 pounds?
5. How many tons and hundred-weight are there in 4500 pounds? In 2900 pounds?
6. How many tons, hundred-weight, and pounds are there in 4625 pounds? In 2643 pounds?
7. What will 6 hundred-weight of sugar cost at 9 cents per pound? At 10 cents per pound?

8. If a bushel of wheat weighs 60 pounds, how many bags that hold 2 bushels each will be required to hold 4800 pounds?

9. What will 5 pounds of indigo cost at 5 cents an ounce? What will 7 pounds cost?



## LESSON LXXXIV.

### MEASURES OF TIME.

The names of the ordinary divisions of time are seconds, minutes, hours, days, weeks, months, and years.

TABLE.

60 Seconds	are equal to	1 Minute.
60 Minutes	" " "	1 Hour.
24 Hours	" " "	1 Day.
7 Days	" " "	1 Week.
30 Days	" " "	1 Month.
12 Months	" " "	1 Year.
365 Days	" " "	1 Year.
100 Years	" " "	1 Century.



1. How many seconds are there in 5 minutes?  
In 6 minutes? In 10 minutes?

2. How many minutes are there in 2 hours? In  $\frac{1}{2}$  of an hour? In  $\frac{1}{4}$  of an hour?

3. How many hours are there in 2 days? In  $\frac{1}{2}$  of a day? In  $\frac{1}{3}$  of a day? In  $\frac{1}{4}$  of a day?

4. How many days are there in 4 weeks? In 6 weeks? In 7 weeks? In 10 weeks?

5. What part of an hour are 30 minutes? 15 minutes? 45 minutes?

6. How many hours are there in 90 minutes? In 120 minutes? In 180 minutes?

7. How many centuries are there in 1500 years?

8. Of what century is the year 1501 a part?

#### TABLE OF MONTHS.

<i>Order.</i>	<i>Name.</i>	<i>No. of Days.</i>	<i>Season.</i>
1st.	January,	31.	} Winter.
2d.	February,	28 or 29.	
3d.	March,	31.	} Spring.
4th.	April,	30.	
5th.	May,	31.	
6th.	June,	30.	} Summer.
7th.	July,	31.	
8th.	August,	31.	
9th.	September,	30.	} Autumn.
10th.	October,	31.	
11th.	November,	30.	
12th.	December,	31.	} Winter.
365 or 366.			

#### RHYME OF THE MONTHS.

Thirty days hath September,  
 April, June, and November.  
 All the rest have thirty-one  
 Save February, which alone  
 Hath twenty-eight, and one day more  
 We add to it one year in four.

1. Repeat the months in their order.

2. What is the 5th month? The 7th? The 4th? The 3d? The 10th? The 8th?

3. What are the months of Winter? Summer? Spring? Autumn?

4. How many months have 30 days? How many 31 days?

## COUNTING.

The following denominations are used in counting some classes of articles:

TABLE.

12 things	are called	1 dozen.
12 dozen	" "	1 gross.
12 gross	" "	1 great gross.
20 things	" "	1 score.

1. How many eggs are there in 6 dozen eggs?
2. How many dozen are there in 2 great gross?
3. How many are  $\frac{1}{2}$  dozen dozens of eggs?
4. How old is a man who is 3 score years of age? 3 score and 10?

## STATIONERS' TABLE.

The denominations used in the paper-trade are:

24 sheets	are equal	to	1 quire.
20 quires	" "	" "	1 ream.

1. How many sheets of paper are there in 2 quires? In  $\frac{1}{2}$  of a quire? In  $\frac{1}{4}$  of a quire?
2. How many quires are there in 2 reams? In  $\frac{1}{4}$  of a ream? In  $\frac{1}{2}$  of a ream?
3. What will be the cost of a ream of paper at 20 cents a quire? At 1 cent a sheet?

## LESSON LXXXV.

1. The method of expressing numbers by letters is called the *Roman Notation*.

*Letters.* I, V, X, L, C, D, M.

*Values.* 1, 5, 10, 50, 100, 500, 1000.

## TABLE OF ROMAN NOTATION.

I . . . . .	1	XXII . . . . .	22
II . . . . .	2	XXIII . . . . .	23
III . . . . .	3	XXIV . . . . .	24
IV . . . . .	4	XXV . . . . .	25
V . . . . .	5	XXVI . . . . .	26
VI . . . . .	6	XXVII . . . . .	27
VII . . . . .	7	XXVIII . . . . .	28
VIII . . . . .	8	XXIX . . . . .	29
IX . . . . .	9	XXX . . . . .	30
X . . . . .	10	XL . . . . .	40
XI . . . . .	11	L . . . . .	50
XII . . . . .	12	LX . . . . .	60
XIII . . . . .	13	LXX . . . . .	70
XIV . . . . .	14	LXXX . . . . .	80
XV . . . . .	15	XC . . . . .	90
XVI . . . . .	16	C . . . . .	100
XVII . . . . .	17	CC . . . . .	200
XVIII . . . . .	18	CCC . . . . .	300
XIX . . . . .	19	D . . . . .	500
XX . . . . .	20	DCCC . . . . .	800
XXI . . . . .	21	M . . . . .	1000



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